THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LX. SATURDAY, JANUARY 23, 1892. No. 4.

ORIGINAL ARTICLES.

LATE SYPHILIS.[1]

BY P. S. CONNER, M.D.,

PROFESSOR OF SURGERY IN THE MEDICAL COLLEGE OF OHIO AND IN DARTMOUTH MEDICAL COLLEGE; SURGEON TO THE CINCINNATI HOSPITAL, ETC.

MORE than any other disease, not excepting tuberculosis or carcinoma, syphilis is the common meeting-ground of us all, physicians, surgeons, obstetricians, specialists, pathologists, sanitarians.

Practitioner or philosopher, it matters not, there is to each a mighty interest in the study of the nature, the action, the effects, of this scourge of humanity. Modified, attenuated by transmission through a dozen generations, it is still a dreadful and a dreaded ill. Were there only the early lesions, the primary sore, the cutaneous efflorescences; the mucous erosions; did it run its course in weeks or months; were its subjects then left well, changed only as one is changed after an attack of vaccinia, syphilis would take its place among the minor ills, not altogether an ill, for there would be secured by its passage through the body protection for the future. And this is its history in a large proportion of cases. Because of the action of the normal law of infectious diseases, and doubtless still more because of a widespread, may it not be said universal, syphilization through the centuries, the intensity of its action has been so lessened that in two-thirds, it may be four-fifths, some would have us believe nine-tenths, of the cases to-day, the duration of the attack may be measured by weeks, at least by a few years, and its severity is so slight that we might almost speak of the benignity instead of the malignancy of the disease. To say with even close approximation to truth what proportion of cases end with the superficial manifestations is impossible. Hospital statistics are of little value. Oftentimes, patients in the early stage of the disease are excluded. Generally, only in limited number are they compelled to cease work and be cared for in the wards. As a rule, those that ask public assistance are wanderers, whose life-history cannot be traced, who not seldom are, first and last, at many hospitals, or they again and again appear at the same hospital, to swell the numbers and vitiate the statistics. Nothing could more conduce to error than to take the reports of any institution, or any set of institutions, and base a conclusion upon figures as to the actual ratio of organic lesions to early manifestations.

The case-books of specialists will not furnish the required data. The masters in this department of surgery must have under care organic lesions far in excess of their actual proportionate occurrence. The ordinary practitioner of to-day can seldom furnish the desired information, for of his *clientèle* it may largely be declared "*varium et mutabile semper.*" The family physician who has known his cases from the cradle to the grave may tell us much, but he is fast passing away, and is even now but occasionally seen.

Careful examination of the sick-reports of armies having long terms of service would be of great value. As it is, though we are each largely influenced by personal observations, the almost universal feeling is that in about three out of four, or four out of five, of the acquired cases, the disease is short-lived, and does but little damage.

Unfortunately for the prognosis in any given case, there is nothing in either the character, the extent, or the intensity of the early symptoms, nothing in the course and duration of treatment, that makes it certain that in time all will be well with the individual, that either spontaneously or by art the disease will in time have become eliminated. Nothing except a reinfection can make apparent that it is not merely latent, to reappear at some distant day. But it certainly is hard to understand how it is that the milder the earlier manfestations the greater is the liability to the occurrence of grave late lesions. Is the poison eliminated through the cutaneous and mucous rashes and patches? Are not such eruptions indices of the intensity of infection? As a rule, are not the later symptoms and sequelæ of other infectious diseases milder and more likely to be escaped when there is little disturbance at first than when it is otherwise? Who regards a child as better and for a longer time protected against variola, that is, its system more thoroughly infected by vaccinia, in direct proportion to the fewness of vesicles and the absence of local and constitutional disorders?

Those syphilitic by inheritance suffer from the late lesions in far greater ratio, and this cannot surprise us when regard is had to the developmental

[1] Read at the Congress of American Physicians and Surgeons, September 23, 1891.

activity of intra-uterine life, and the usual impossibility of therapeutically affecting the disease during that stage of its evolution.

It is with the smaller fraction of cases in which there is something more than superficial manifestations — with the organic, destructive, deforming lesions, with the affections that may not show themselves for many years, with "late syphilis" — that we have now to do.

Neither chronologically nor anatomically is there a sharply-defined line of demarcation between the early and the late constitutional symptoms. The one may be indefinitely prolonged, the other very early manifested; cutaneous and mucous lesions may not be confined to the first months or years; the visceral affections may be synchronous with, or even precede the common eruptions. But, speaking generally, there is a pathologic distinction of great value: the late lesions are neo-formative; the early hardly ever so; the late so largely gummatous that the gumma is the sign and seal of the tertiaries. Further, they are not communicable.

As a rule, to which, however, there are not a few exceptions, the late lesions are quietly developed, their existence often announced only when destructive action has produced its effect in irreparable loss of substance, Nature having made no effort to expel the disease, which, no longer a foreign, toxic intruder, has become a part and parcel of the economy. Rarely are the new formations observed before the the end of the first year; they rapidly become more frequent up to the end of the third year. Comparatively seldom are they first developed after the close of the fifth year.

Only with life itself ends the possibility of gummata forming in one who has acquired syphilis, and even when the disease is inherited the outbreak may be delayed until the body has reached its full maturity. No region, no organ, no tissue is exempt from invasion, with resulting new-growths in mass diffused, or in the arterial walts. Of most frequent occurrence, and therefore of greatest interest, are the affections of the bones and of the nervous centers—the first known from early times, the second recognized and understood only within the period of our own lives.

That the skeleton should be attacked is not surprising, when its structure and functions are remembered. Bone is not, as all are more or less inclined to regard it, mere formed material serving for support, protection, and muscle-attachment, but in its more important, physiologically more valuable part, it is formative, a species of lymph-gland, liberally supplied with blood, and active in effecting those corpuscle-changes on the perfection of which depends the health of the whole body. If this is so, why then, it may be asked, is not its affection an early one, and not a lesion of advanced syphilitic life only. Is it not so?

Besides the well-known characteristic osteocopic pains and periosteal swellings of brief existence, are not a few of the feebler, more diffused, more fugitive aches in leg, chest, and head, not a little of the general weakness and marked anemia of the first months, due to infected blood passing through the bone-vessels (the swollen, irritated lymphoid cells resulting, a part of the general adenopathy) and to the impairment of the functional value of the bone activity? Coming on at an ill-defined later period, the new formations are in those parts in which normal cell-changes are most decided, the vessels of which are most abundant, and that are most subject to the action of slight traumatisms, tendon-strains, and atmospheric influences.

In this, syphilis is like tuberculosis and osteomyelitis; and in the resemblances in location and course of specific bone-disease to the other affections just named, may there not be found reasons for believing that, like them, it is of mycotic origin, the definite organisms of which may not long escape detection?

The lesion may be single or multiple, confined to a single bone or present in many, asymmetrical or symmetrical. That there is occasionally affection of corresponding bones on both sides of the median line of the body, either synchronously or in quick succession, is a fact, though without doubt it is exceptionally so, in marked contrast to the symmetrical manifestations of the earlier period.

The three varieties of bone-inflammations are present as in no other disease; a rarefying, condensing, and developing osteitis occurring together, in the same bone it may be, much more often in separate parts of the skeleton more or less remote, or following each other at variable intervals of time. Excluding the bones of the head and face, the affected parts of the skeleton rarely show the molecular destruction of caries in comparison with the death in mass of necrosis, and even the latter is ordinarily limited to but a small part of the tissue involved (the sequestrum seldom being of any considerable size) and more often due to excess of reparative action, than to a primary cutting off of the blood-supply.

Liquefaction is rarely observed and true suppuration only as an accident, when there is an added infection by the pus-formers. Rarefaction and condensation go on together to an extent unequalled in any other form of bone-inflammation, and such marked association may be accepted as strongly indicative, if not absolutely demonstrative, of specific nature. New formation of bone on the interior, the exterior, and at the ends of the diaphysis, is a common result; but, as a rule, the weight

of the deformed bone is not proportionate to its size, and not seldom it falls below the normal, so great has been the rarefaction, which may, and at times does, reach such a degree that fracture follows slight violence or muscular action. Such lesion may be the first observed indication of existing syphilis, and its occurrence should always excite marked suspicion whether the subject of it is adult or child. Very possibly there is something more than simple rarefaction in these luetic bones that makes them so brittle, the strengthening fibers not only being few in number but each and all abnormally weak as a part of the general depravity that belongs to syphilis.

In the long bones it is above rather than below the epiphyseal line that the inflammation is, as a rule, located; hence the comparative infrequency of secondary joint-affection; though the gumma may form under the encrusting cartilage, and by its resulting destructive action upon a part of the articulating surface, or later by pushing its way into the synovial cavity, it may set up joint-disease, specific or common, that, unlike the bone-inflammation, is often suppurative. Curiously enough it is not absolutely certain that such disease will follow the intrusion and prolonged residence of the gummatous mass in the joint-cavity. The frequency of periosteal disturbances, both early and late, exudative and gummatous, may be due not only to a primary infection of the affected area, but to extension to it from the interior of the bone along the Haversian canals or the tissue in the extra-epiphyseal region to the deeper layer of the periosteum, the continuity of which is a demonstrated anatomic fact. Were as careful examination made of the bones of syphilitics as of their throats, lungs, or livers, it is highly probable that osseous lesions, congestive, exudative, and neo-formative, would be found to be of great frequency—existing often when not at all suspected. As ordinarily seen at the present day, extensively destructive and deforming bone-inflammations are almost confined to the head and the nasal regions. It is but rarely that there is found one of those greatly enlarged, rough, as it were worm-eaten and stalactite-covered long bones that are so common in the museum collections of forty, sixty, and one hundred years ago. The reasons for this are not far to seek. The disease is milder, the patients are better fed and better housed, the proper treatment is more systematically and thoroughly applied. Even in the vault of the cranium great gummatous ulcerations and mortifications are not so very often met with, and in the sternum they are surgical curiosities. Yet these are the bones in which the serpiginous and tunneling advance of the morbid process can most freely take place. It is in the skeleton of the nose and parts adjacent, that specific caries and necrosis are most common, the reason for which is (in large measure doubtless) found in the exposed position of the bones, the thinness of some of them, the unusual abundance of small vessels as compared with the number of main feeding-trunks, and the intimate fusion of mucous membrane and periosteum. No better illustration could be found of the oftentimes insidious symptomless course of gummata, than is afforded by many cases of these naso-pharyngeal affections, the existence of which may be revealed only after large tracts of bone have become necrotic. In the adult and when acquired, there is seldom difficulty in recognizing the specific nature of the lesion, except in those cases primarily epiphyseal and later involving the joint, in which a preceding syphilitic course cannot be ascertained, either by tracing the history of the patient or carefully searching for the physical evidences of cutaneous or deeper affections. In such cases the diagnosis must rest upon the slowness of development, the non-existence of rheumatic or tuberculous disease in other parts of the body, the absence of pain except upon pressure, and then only in limited and fixed areas, the slight impairment or non-impairment of the joint-motions, the failure of ordinary therapeutic measures to effect relief, and the decided, often rapid, benefit from the administration of the iodides. In cases by inheritance, especially when the infantile manifestions have been slight and the bone-disease appears at eight, fifteen, or twenty years of age, its specific nature can be easily, and again and again has been, misunderstood.

Though a very large proportion—nine-tenths or more—of chronic bone-disease and joint-disease, in the child, the adolescent, and the young adult, is tuberculous, yet the cases in which it is of syphilitic origin are by no means few. How may they be recognized?

1. By location. The lesion is in all probability in a long bone, not an irregular one, not a vertebra, not in the tarsus or the carpus, but in the tibia (and this above all others), or in the femur or a phalanx. If in the long bone it is much more probably in its diaphysis than in the epiphysis. Take away the cases of affections of the articulating extremities of the femur, the tibia, the humerus, the forearm bones, how many cases of tuberculous disease of the long bones would remain?

2. By recognition of traces on the cornea, the teeth, or the skin, of previous syphilitic affections, and that, too, perhaps in one markedly hard of hearing, and evidently feebly developed.

3. By application of the therapeutic test.

4. When practicable, by inoculation. Of course, if it can be determined that one or both parents

were syphilitic before the patient was born the difficulties of diagnosis are greatly lessened.

The most frequent, the most dangerous, and until recently, the least understood lesions, are those of the nervous system, to which "syphilis is a veritable poison." In the intensity of brain-activity and the necessarily correlated, always abundant yet never constant, blood-supply, is found the explanation of the fact that in one-third of the cases of tertiary lues decided disturbances of motion, sensation, or intellection are observed; taking no account of the irritative neuralgias, the cries for healthy blood, that more or less severe, more or less fugitive, are seldom or never absent in the earlier months. Rarely found among the inherited affections of children, nerve-syphilis attacks men much more often than women, and especially seizes upon the brain-workers, those engaged in professional or literary pursuits, or such business as calls for undue, irregular and quick use of the organs of perception and feeling. Alcoholic poisoning, with its alternating mental exaltations and depressions, and its slowly advancing but certain and permanent arterial degenerations, strongly favors its development. Any debilitating cause of long continuance increases the liability to its manifestation, and not least among them is malaria. The new-growths, here as elsewhere, diffused, circumscribed, or in the vessel-walls, are seldom of large extent, are likely to be multiple, and occur in regions in direct proportion to their vascularity, *i.e.*, to their functional value; much more often, therefore, on or near the surface, than deep in the substance of the nervous mass. Their effects are due to pressure, to involvement and consequent destruction of tissues of importance, to irritative and inflammatory changes around and about, to the direct or indirect impeding or cutting off the inflow, or much more rarely obstructing the outflow of blood from a given area, to (but only exceptionally) extravasation from a thinned and dilated artery. These effects—in other words, the various morbid phenomena observed, the pains, convulsions, pareses, paralyses, vertigos, failures of the special senses, disturbances of sleep, of thought, of memory, coma—are in themselves in no respect different from those produced by non-syphilitic causes.

It is upon associated conditions of age, of general health, of antecedent history, of previous attacks, of transitory course, of combined, perhaps strangely combined morbid conditions, of remissions or intermissions, spontaneous or therapeutically secured, that the differential diagnosis is based. The new-growths, whether in the meninges alone, or in both envelope and cortex, must follow the same course as similar formations in other parts of the body—occasionally becoming spontaneously absorbed, at times liquefying, even perhaps to the extent of producing cysts, giving no evidence of their specific origin, more often reduced in size, or, unfortunately not very often, entirely removed by proper treatment, producing limited cerebral softening because of the anemia consequent upon vessel-obliterations or plugging, or the specific irritation-changes outside of the infected area—such changes being more dangerous than the growth itself, the the pressure of which increases so slowly that the brain can readily accommodate itself to it.

In his address at the Berlin Congress, Mr. Horsley, speaking of the cerebral gumma declared that "Medicinal treatment in nowise cures, and only very temporarily alleviates the trouble. . . . Excision offers the only chance for the patient." Is this the fact? Has not again and again much more than very temporary alleviation followed the administration of the iodides, with or without the mercurials, in cases in which there was present every ordinary indication of the existence of an intra-cranial gumma? However great the advances of brain-surgery in the last few years, would not the outlook of a syphilitic be much worse than it is, if only in the exposure and removal of the gumma could be found a chance of recovery? To be sure, he is much more likely to have a sclerotic patch than a distinct tumor, but on the other hand a pre-operative diagnosis between the two lesions is not always easy, and is not seldom impossible.

The affections of motion, of sensation, and of intellection are frequent, in the order given. The first, at some time or other, in some degree or other, are present in every case. The second—far more often on the side of diminution than of excess (for hyperesthesias, except as neuralgias and headaches, are comparatively rare)—are frequently absent, and if they exist, are commonly of but moderate intensity. The third form but a small part of the lesions under observation, whether one looks for impairment of memory, for change of temper, for more or less decided melancholia or mania, for the grave and inevitably lethal symptoms of general paralysis, or for the obscuration, partial or total, of coma that so often presages speedy death.

The disturbances of motion may show themselves either in increase or in diminution of movement, in convulsions or in paralysis. That epileptiform seizures should frequently occur is only what might be expected. The motor area of the cortex is a region of great functional activity, consequently of very numerous bloodvessels; as a necessary result, new-growths in abundance are developed and meningo-encephalic adhesions are formed, and excitation by irritation or pressure very naturally follows. Though occasionally generalized and like common epilepsy, the disease is far more often very akin to the Jack-

sonian affection; so much so, that recognition of its specific nature oftentimes is not made—sometimes, perhaps, cannot be. But convulsions very rarely appear for the first time in early or middle adult life, except as the result of traumatism; occurring primarily after fifty, they are of grave import with reference to general paralysis, or organic disease of the kidney or heart. It is in the interim between the time of the attacks of childhood and of approaching old age that the syphilitic seizures occur; and this fact is of much diagnostic value—enough, almost to establish specific nature in the absence of other evidence.

Hysteria may mimic syphilis, as it does so many other affections, but it is of infrequent occurrence in men. Brain-syphilis, in any of its manifestations, is comparatively seldom seen in women, and the hysterical disorders of sensation are not present.

The paralyses are much more common, constituting, it has been estimated, one-fifth of all paralyses observed, and, speaking generally, are of graver import than are the convulsions, since, aside from certain of them occurring early, they are indicative of more extensive new-growth or more destructive lesion of adjacent parts.

Pareses rather than paralyses exist in many cases; these motor disturbances are strangely combined, often intermittent, not seldom one-sided, passing at times from one side to the other, either quickly or only after the lapse, it may be, of many months of marked improvement, or even of entire relief of symptoms. Coming on slowly as a rule, with no antecedent apoplexy, arresting, at times completely, the action of a single muscle or set of muscles, while slightly impairing that of others near or far away; attacking the ocular muscles, the nerves, of which the third, fourth, and sixth are rarely involved in the paralyzing lesions of other origin; preceded oftentimes by prodromal cephalalgias of decided, even intense, severity; frequently, on the other hand, associated with no material disturbances of sensation, the mental faculties remaining, in general, unaffected; often yielding readily to treatment, early and thoroughly applied, incapable of change for the better when due to destructive softenings or cicatricial repair-changes; these paralyses, by their location, extent, and time of appearance, are ordinarily readily recognized as of specific origin, and serve as indices of the parts of the brain especially diseased. They are often associated with marked affection of the speech-center, or at times with disturbances of the special senses; aphasia and sense-impairments being ordinarily incomplete, fugitive, intermittent, recurring, it may be, only at irregular and remote intervals.

Sensation, frequently unaffected, certainly in any marked degree, may be diminished or exaggerated. The agonizing headaches of the earlier stages of the disease, when they are often of cranial rather than of cerebral origin, are not so very seldom equalled by those associated with the late deep-seated lesions; and at times there are observed severe, lasting facial neuralgias from involvement of the fifth nerve within the cranium. The special senses share, but in a much less degree than might be expected, in the sensory disturbances of the intra-cranial affections. In by far the larger number of cases of specific blindness and deafness, the producing lesion is located in the orbit and in the ear.

Disturbances of intellection, to the extent of somewhat enfeebled mental action, especially on the side of memory, are of such common occurrence that they may be regarded as almost necessarily associated with any and all of the brain-lesions. They are due, in great measure certainly, to the disturbed circulation within the cranium, and are matters of little moment, being often simply expressions on the part of the cerebrum of the general depression that syphilis always produces. In a limited number of cases, the psychic disturbances are much more positive. The subjects of them become unfit for business, are excessively irritable, markedly melancholic, actively maniacal, or even seemingly demented. Many of them become general paralytics; and a large proportion of those having this almost certainly fatal affection have a syphilitic history, though the specific poisoning has been only one of the depraving conditions that have brought about the mental state. In all the psychic affections in which clear evidence cannot be found of a limited, circumscribed brain-lesion, anti-syphilitic treatment, instead of proving beneficial, is positively injurious.

In certain cases—fortunately they are very few—most marked motor sensory and mental disturbances occur, suddenly and simultaneously; the patient being found, ordinarily after sleep, in a state of stupor, from which it is usually possible to arouse him, but only partially, it may be but for the moment. The muscles of the extremities are all thoroughly relaxed, as are also those of the bladder and rectum. Sensation is greatly impaired or abolished. The pulse-rate is decidedly lessened, the breathing is slow, and the temperature is sub-normal. This syphilitic coma may or may not have prodromata, sensory or motor; may come on in those in whom the syphilitic disease is active or latent; may appear early or only many years after the primary infection. It may terminate in speedy death or in recovery, which is often followed by recurrent attacks, sooner or later destroying life.

Under a mercurial treatment, promptly and vigorously instituted and persistently maintained for many months, relief, even permanent, may be expected and secured.

Spinal lesions are of infrequent occurrence, both actually and as compared with cerebral lesions. As cranial exostoses may press upon the dura, so may vertebral outgrowths press upon the adjacent membranes, and the spinal canal being narrow, a mass of moderate size may cause destruction of the contained cord, directly by compression, indirectly and more often by interference with the blood-supply. Neoplasms in the meninges or in the cord itself will by pressure produce pains in the affected area or at the remote points of nerve-distribution; and paralysis, according to size and location, limited or extensive, of a single muscle or set of muscles; or hemiplegia, paraplegia, it may be of trunk, arms, and legs, due either to compression or degeneration of the cord. The associated sensory disturbances may be slight or severe, intermittent or fugitive, on a paralyzed side or on the opposite, but the deeper situation of the gray matter always protects in greater or less measure against its compression, still more its destruction.

A question of much interest is that of the causative relationship of syphilis to locomotor ataxia. Is this disease one of the late specific spinal lesions? That the majority and a large majority of ataxics have at some time or other had syphilis cannot be questioned. It has been declared that a syphilitic history is more often found in connection with tabes than a rheumatic history is found in connection with disease of the heart. But tabes certainly is not of true gummatous origin, nor can the sclerosis be regarded as the result of the diffused formation so often found in the cerebro-spinal axis. Syphilitic treatment generally, may it not be said always? fails to cure—may not even retard the evolution of the symptoms. In no small number of cases there has been no luetic infection, and when there has been such, view the disease as we may, locomotor ataxia can only be regarded as a sequel, not a lesion, of syphilis; bearing perhaps, as has been suggested, some such relationship as post-diphtheritic paralysis does to diphtheria, though it is much easier to understand an early-displayed paralyzing action of the ptomaïnes of an infectious disease than such action manifested five or ten or twenty years after apparently complete subsidence of all local symptoms.

If either the time or the occasion permitted, consideration might well be given the lesions of other parts, of skin, of throat, of lung, of liver it may be, lesions always gummatous in character and destructive in effect. Everywhere and at all times a manifestation of late syphilis means danger to part, danger to life; the latter, while often escaped, not seldom becomes a reality to the fullest extent.

How are we to understand year-long intermissions, with after-development of grave functional and organic disturbances? With the disappearance of an unimportant syphilide, the young man seems to be free of his malady. In physical and mental health he passes the years of maturity, and sturdy children, without spot or blemish, grow up around him. When fifty or sixty or eighty years old, it may be, with the changes inseparable from advancing years, there appear organic affections that are unmistakably specific. Such cases are rare, very rare, if you please, but they nevertheless exist. Where has the disease been in hiding all these many years, and in what shape? Recurrences take place in other affections, but do they closely resemble these late manifestations of syphilis? The adult that in childhood had a white swelling, a hip-disease, or a caries of the spine is very likely to die of pulmonary tuberculosis before he has passed middle life; but the exciting organism has been encapsulated in the primarily-damaged area, and has been set free by a breaking down of the fibrous and osseous envelope, or, without direct relation to the primary lesion, the bacilli have come in from without, producing not a reinfection, but a new infection, and the disease so developed passes through its regular stages from the very first, or the lighting up anew of morbific action in the long-encapsulated mass has caused a new synovitis or a caries, in no respect different from the original. In a femur or tibia that was affected by an osteomyelitis of adolescence, suppurative osteitis may show itself years later. Here there has been a setting free of pyogenic organisms long imprisoned in the bone, or as a place of least resistance the bone has again inflamed under the action of such organisms taken up anew from a distant felon or abscess or ulcer, and carried along in the blood-stream.

The individual from whom a scirrhous breast has been removed may have malignant disease of the bronchial glands, of the stomach, or of the liver after several years of apparent health; but the places of detention and the route of infection can be found and traced. In each of these diseases the recurrence is like the original attack, differing only in the extent and rapidity of its action. Not so with syphilis. There is in this long-delayed manifestation no first or second stage, no initial lesion, no roseola, no mucous patch. Without any inaugurating local or general disturbances there is developed a gumma. Is this the reproduction under the influence of irritation of unknown character of the original chancre, the cutaneous papule, or the temporarily enlarged glands? It is simply, we are told, another step in the advance of the disease arrested for an unusual time at its second halting-place—such arrest, in and of itself, no more strange than the arrest for hours of an attack of intermittent fever. But in this latter affection, when the new start is made, the old cycle is travelled again, the

symptoms are general; and the same may be true if the intermission has been of months' or of years' duration.

But in syphilis the new disturbance is confined to a very limited area—in a bone, in the rectum, or in the cranium—in which, in many cases certainly, there had been no previous disease, at least no evidence of such. No other part of the body may ever be affected; the lesion is purely local. What developed it? A specific organism long dormant at the spot? If it were so, would there not have been in the remote antecedent period of syphilitic activity some evidences of the non-specific overgrowth required for its encapsulation? Consequent upon its presence, would there not have been in the part something more than a fugitive, ill-defined ache? And even this is frequently absent. Is it a poisoning product, like a ptomaïne, of the earlier action that, after long presence in the blood, is carried to the seat of the late manifestation, and there excites the new-formation? Can anyone understand a poisoned state of the blood that is continued through years, the septic chemic agent remaining unchanged, or constantly reproducing itself or being reproduced, without there being any manifest symptoms of departure from the normal standard of health, until at a far distant day it causes a syphilitic new-growth in some part or other?

What is the morbific agent? what suspends its action? where is it stored? what so late starts it up into destructive activity in only one direction, ending in one product, whether the period of latency has been one year or forty years—the same, indeed, if there has been no "sleep-time" after the disappearance of the cutaneous congestive or exudative lesions, and the disease has passed directly from stage to stage? Are there not in this course of syphilis questions of intense interest relating to nature and action—problems well deserving consideration and solution, if solution be possible? But there are other questions that may well be examined—questions of fact, but not respecting the character, location, or effects of lesions.

What are the relations of syphilis to other diseases and to injuries? How is it affected by them and they by it?

Preëxisting tuberculous disease, because of the general weakness induced by it and the lessened power of the cells to protect themselves, renders probable a more severe, often a more rapid, syphilitic course. It is not necessary that such disease should be manifestly active. To the "strumous" individual, other things being equal, a specific infection is always more dangerous, both in the extent and destructiveness of lesions, than it is to others. In negroes and mulattoes, in our country, the severity and, yet more, the persistency of lues, especially in its glandular enlargements and its external gummatous ulcerations, are due, it may well be believed, to the tuberculized soil upon which the specific virus has been implanted, fully as much as to irregular living and neglect of treatment. Certain lesions are more common in tuberculous than non-tuberculous persons, such as the gummatous stenoses of the alimentary tract, especially of the esophagus and rectum.

That specific lesions may become tuberculized has been proved by the occasional bacillary infection of syphilitic lupoid tissue; but only very rarely does the tubercle-bacillus find a nidus in and about a syphilitic new-formation. A partial explanation of this lies doubtless in the fact that in the great majority of cases tuberculosis of parts other than the lungs has been produced, or is likely to be produced, only at an age antedating syphilitic infection, or at least the period of the late manifestations.

Syphilis is not likely to be inoculated upon an individual suffering from carcinoma; and if it is, there is no good reason why the two diseases should not go on each in its natural way. But carcinoma may attack an area in which there have long been specific thickenings and indurations, as in the chronic leucomata of the tongue, in the same way and for the same reason that it is often a direct consequence of non-specific irritative epithelial overgrowths. Occasionally, a gumma undergoes carcinomatous degeneration, more often when situated in the substance of the tongue than anywhere else, and the local affection, no longer amenable to specific treatment, advances steadily from bad to worse, the neighboring gland or glands soon becoming infected, and death resulting at no distant day from weakness, from hemorrhage, or from visceral disease. In certain localities, especially in the breast, a gumma may readily be mistaken for a carcinoma, and in not a few instances the mamma has been removed because of the existence in it of a mass that would have disappeared under treatment by the iodides. If syphilitic growths do not become sarcomatous, they often much resemble sarcomata, and many a reported successful operation for the malignant affection has been really one in which a gumma has been removed. Particularly has this been true of tumors in muscles, and in the orbital cavity.

How does syphilis affect wounds, and how do traumatisms affect the disease? As a rule, the wounds of syphilitics, when the affection is in a passive latent stage, heal as promptly and as kindly as those of others, though union may be delayed or even be prevented until after the patient has been brought under the influence of the anti-specific remedies. This is much less true of wounds of the soft than of the hard parts—*i. e.*, fractures, in which, in

spite of the most judicious treatment, at times false joints will form. When the specific lesions are in process of active evolution, it matters not whether early or late, the chances of interference with proper repair are not few, and no operation should be performed at such a time that with safety can be postponed. Indeed, at any time before performing an operation the success of which depends upon the securing of primary union, it is well to keep the patient for several weeks under the influence of the iodides and mercurials. Very rarely, under any circumstances, does a wound become actually syphilitic.

In one who has had the disease, even though there may not have been a manifestation of it for years, any traumatism may be the starting-point of extensive specific lesions. On the other hand, when the individual becomes syphilitic, an old scar or fracture-callus may break down, just as it may under the influence of scurvy.

Is aneurism in comparatively young subjects, say under forty, consequent upon syphilis? Always? No. In very many cases? In all probability. As one of its most marked effects, the specific disease unquestionably produces endarteritis; and, though this inflammation especially attacks the medium-sized and smaller vessels, it is not limited to them, and the weakening of the walls that it produces cannot but predispose to fusiform or sacculated dilatation.

As respects life, is syphilis a grave disease? Very much so in its inherited form, its lethal influence being exerted from the moment of conception. Four-fifths of the pregnancies terminate prematurely, and of the children born alive the great majority die within a few weeks or months, or at most years. But not seldom after cessation of manifestations, in the intervals of manifestations, or even in the very late tertiary stage, the spermatozoids and ova are sufficiently free from syphilitic influence to permit of the begetting of healthy children. But acquired, in adults, the mortality-rate is very low—how low it is impossible to state, vital statistics on this point being, for obvious reasons, defective and unreliable. In our census report for 1880 it did not reach one per thousand of the whole number of deaths from known causes. How seldom in private practice has it happened to any one of us to have a patient die of syphilitic lesion?

Clinicians, medical and surgical, have learned very thoroughly the coarse lesions, and pathologists the structural character of the new-growth in organs and tissues. Practitioners, general and special, are in unusual degree in accord as to treatment, even as to the extent to which it should be carried. The professional work of the future must be chiefly that of the microscopists, the bacteriologists, and the medical chemists. In the laboratory, not at the bedside, will be revealed the secrets of nature, growth, dissemination, and influence.

If it be possible, sanitarians and political economists have before them the task of working out some practical and practicable plan of controlling the spread of this disease, that damages the young, weakens the strong, infects the innocent, diminishes the results of labor, increases the poor-rates, keeps down the population—that is everywhere and in all respects destructive to the private and the public weal.

ELECTRO-THERAPEUTICS IN AMERICA.[1]

BY A. D. ROCKWELL, A.M., M.D.,
OF NEW YORK.

IN complying with the request of the President of this Association, that I prepare a paper dealing with the earlier work of my late associate Dr. Geo. M. Beard and myself in developing the field of electricity in medicine, and in securing for it professional recognition, I beg in the beginning to bespeak your patient forbearance toward what might under other circumstances seem an undue amount of personal reference. A little more than twenty years ago, electricity was but another name for quackery. When the writer first ventured to present for the consideration of the Medical Society of the State of New York a paper on the "Medical Use of Electricity," an eminent physician on the committee exclaimed: "What, is he regular?" At that time, to call oneself an electro-therapeutist was to confess guilt of the grossest ignorance and fraud. To-day all this is changed. Electricity has followed in the footsteps of our permanent specialties and occupies a position of assured respect.

One of the first in this country to call attention to the use of electricity in medicine was Dr. Thomas Brown, of Albany. In a little work entitled "*The Ethereal Physician*," issued in 1823, he recommended franklinic electricity for paralysis, tic douloureux, epilepsy, chorea, and various other diseases, and a year subsequently a Dr. Everett, of New York, contributed to medical literature his own experiences in the same direction.

Although some good was accomplished, electricity was found to be a most uncertain remedy.

How, indeed, could it be otherwise? Induction electricity had not yet been discovered, and both the old cylinder static machine and the voltaic pile were uncertain and inconstant in their action. All efforts at this time, therefore, for the purpose of

[1] Read at the first annual meeting of the American Electro-therapeutic Association, held at Philadelphia, Sept. 24, 1891.

giving importance and dignity to electro-therapeutics signally failed, and it was not only neglected, but fell into absolute disrepute. But when induction electricity was discovered by Faraday, in 1832, able men abroad became interested in the scientific investigation of the subject. In this country it was taken up in a far less scientific spirit. Most extravagant and incredible statements as to the results to be obtained from faradization were freely made, and although a few honest physicians endeavored to give respectability to electro-therapeutics, the majority of workers in this department were laymen, having no part or lot in the realm of science, and as devoid of conscience as of intellect. Many of these practitioners combined localized with general faradization, and some employed the latter exclusively, though with little definiteness or precision.

And yet it must be admitted, I think, that many of these empirics, by general or localized faradization, or both combined, or by methods various and inconstant, achieved successes in the treatment of disease surpassing those obtained by many physicians at the present day. Some twenty years ago I met at the bedside of a patient an old gentleman of whom I had frequently heard, and who had for years been known to very many practitioners of New York. Without possessing the slightest knowledge of anatomy or physiology, or of the principles and practice of medicine, this man had for thirty-five years followed the so-called business of an electrician, and had treated an enormous number of persons. I was amused by many of his absurdities of statement, but was thoroughly impressed by his unswerving integrity and vast experience, and I naturally desired to know more of his method and processes in a field, at that date, so little cultivated by the profession. On many occasions subsequently I carefully watched his methods of procedure, and saw him successful in desperate forms of chorea, neuralgia, and in many other forms of chronic nervous disease.

The first case that in this way fell under my observation was one of most severe and persistent nephralgia. For over five months this patient—a young man of about thirty-five—had every day suffered paroxysmal attacks of pain of the most agonizing character. He had unsuccessfully sought relief in every direction. Seven applications given by this old man secured to the patient complete and permanent relief.

A second case that impressed me strongly occurred in the person of a little girl about ten years of age, suffering from a severe form of St. Vitus's dance of eight months' standing. She had taken medicine freely, and, so far as I could judge, judiciously enough. Among other things, I found on examining one of her old prescription bottles that Fowler's solution had been taken in considerable quantity. The patient was treated in the usual stereotyped manner of this operator, and after less than a dozen applications her recovery was assured.

Here are but two of many unwritten cases that in this way were forced upon my attention, and induced me at that time to study more closely the clinical side of electro-therapeutics. Now, this man knew nothing of electro-physiology, or of kindred departments, and while he had a superficial idea of the effects of the constant current, he had never used it, but had confined himself to the use of the faradic current. So far as concerns scientific electro-therapeutics, he existed as a most remarkable example of profound ignorance and immense experience, associated with perfect honesty of intention. He never enunciated an idea; neither had he any conception of the principle on which he worked and through which he wrought cures. He was, however, so thoroughly the master of the method that he invariably used, that the truth of the saying, "that it is not so much electricity that cures as the manner of using it," never seemed so clear as when comparing his effective manipulations with the awkward slipshod movements that are only too frequently the results of careless attempts at imitation.

About this time I renewed an old acquaintance with Dr. Geo. M. Beard, who had recently come to New York and had become connected with the Demilt Dispensary. He also was more or less interested in the subject, and informed me that while still a student at Yale, he had in his own person experienced much benefit from the use of electricity in the relief of a condition of persistent indigestion and nervousness. Supplying ourselves with such apparatus as could be obtained at that date, and depending almost entirely for cases on such as could be sent for free treatment from the dispensary, we began work in a deliberate and systematic way, for the purpose of determining as far as possible the real therapeutic value of electricity. But instead of localized, we now used general electrization, and with results that were far beyond our anticipation. We found that many of the patients thus treated were not only relieved of their local symptoms, but were also improved very decidedly in their general condition. Old cases of indigestion with the usual accompanying symptoms, and a variety of disorders associated with general debility, were very appreciably relieved, and in some cases entirely or approximately cured by persistent treatment. These results and experiences we subsequently embodied in a series of five articles in the *New York Medical Record* under the title of "The Medical Use of Electricity," and the novelty of the views therein expressed and the impression they made was evidenced by the reception accorded them both here and abroad.

At the present time, when the wide therapeutic effects of electricity are so generally appreciated, it is difficult to indicate the intense degree of interest developd by the enunciation of such positive and radical statements in regard to an agent that was looked upon by scientific men only with contempt, or, at least, with indifference. It must be remembered that at that date the whole subject was a veritable *terra incognita*, and to touch it, as one worthy friend remarked to me, was to imperil one's professional reputation. Very naturally, in entering a field so untried, I was desirous of the moral support of men of character and standing in the profession. One of our most eminent surgeons, a man most kindly in nature, broad in his views, and well disposed toward myself, said to me: "It isn't worth your while—any old woman can apply electricity." Another physician, and former teacher, equally eminent in medicine and an author of great fame, prematurely exclaimed as I began to speak of the matter to him: "Oh, I cannot lend my name to any such project!" "But I do not wish your name," I replied; "I simply came to tell you what our idea is, and to ask your opinion as to the propriety of endeavoring to develop the subject of electricity in a legitimate and scientific way." He advised me to keep on in the regular path, and not to meddle with it, but let it remain where it belonged—in the keeping of charlatans.

During my medical college course I do not remember to have once heard the word electricity in connection with the treatment of disease. Medical journals seldom referred to it in any way, and of American literature upon the subject, with the exception of Garrett's ponderous and unphilosophic work, there was absolutely none. It was impossible to obtain any form of apparatus for the generation of the galvanic current, and all our earlier efforts in this direction were made with the inconstant, inconvenient, and bad-smelling voltaic pile. Electricity was known to be of value in stimulating muscular contractions, and paralysis was believed to be about the only condition for which its use was indicated.

Duchenne and Remak abroad, and after them Benedict, Schultz, Meyer, Neumann, Rosenthal, Frommhold, Eulenberg, and others, worked up the field of localized electrization, and in proportion as their knowledge was limited in regard to the whole matter, in just that proportion were they dogmatic in the assertion of their beliefs. They laid especial stress on physiologic experiments without having yet learned much about the physical effects of electricity. One preferred the galvanic and another the faradic current, and heated controversies were held as to whether the better therapeutic effects were obtained by the application of the current to the motor points or to the muscles themselves. Fierce and unreasonable controversies were carried on.

When, therefore, these articles of ours, to which reference has been made, asserted and demonstrated that electrization was something more than a mere stimulant, that it was also a tonic of very remarkable efficacy, and as such was indicated in a wide range of diseases associated with general debility and impaired nutrition, the medical press, here and elsewhere, gave to the subject the most careful consideration. In Germany everything relating to these new suggestions was reproduced and discussed, and to Professor Erb, of Heidelberg, more than to any other, is due the fact that the method by which general nutrition was best influenced was received with so much interest and appreciation.

Up to this time, as far as can be ascertained, men of science had confined themselves solely to purely localized methods of application; and it is a matter of observation that they failed to secure results equal to those of a few empirics who, in spite of their own ignorance, were in daily use of broader and more rational and effective methods. The defect of these empirics, therefore, was not in their results, which oftentimes were truly remarkable, but in the fact that their ignorance of medicine rendered it impossible for them to discriminate in their cases or in their methods, or to intelligently communicate their experience to others, or in any way make it of permanent value to science.

Our own claims in regard to this more general method of using electricity as practised by some of these empirics are: 1st. To have improved it, reduced it to a system and given it a scientific basis, and to have shown its relation to other methods of using electricity; in short, to have done for the method of general faradization what Duchenne did for localized faradization. 2d. To have interpreted its special and general effects; to have given it a name, pointing out the true rationale of the method, and the indications for its use. 3d. To have first called the attention of the profession to this method, enforcing our views by the results of personal experiments, and awakening an immediate interest in this department of therapeutics. 4th. To have discovered in our experiments with this method that electrization is a tonic of great and varied efficacy, and therefore indicated for many conditions; and to have forced this fact on the professional mind until it has become widely accepted, and has become the basis for the use of electricity in a multitude of diseases. This subject was still further developed when we issued the first edition of our *Treatise on the Medical and Surgical Uses of Electricity*, but it was not until the second edition that another important method, which we termed central galvaniza-

tion, was considered with the fulness of detail that its importance demanded. It is so thoroughly established that external applications of the galvanic current penetrate directly to and appreciably affect the brain, and furthermore, that such applications are often of immense service, that it would be unnecessary to advocate its utility were it not that authoritative names were pledged to its condemnation. I cannot attempt in this paper to consider fully the grounds of this condemnation; but a reference to some of the objections of Cyon, as put forth in his *Principles of Electro-therapeutics*, cannot fail to show their unreasonableness and to carry the conviction that the learned teacher is more theoretic than practical. Because we cannot localize the galvanic current in special portions of the brain; because we cannot perfectly explain or understand its physiological action on the centers of thought and motion, or why this action seems to be frequently adapted for the relief of many symptoms of cerebral disturbance; and finally, because we cannot uniformly predict that relief will follow the use of central galvanization in certain conditions—these considerations should be no bar to our use of the current in this way.

In a somewhat varied experience I have observed so many suggestive results follow the use of central galvanization in the psychoses, that I have but little doubt, if in our insane-asylums a systematic and patient trial of this method could be adopted, that a certain proportion of cases now regarded as hopeless would be more or less benefited. In following the views and suggestions of Apostoli, much good work has been done in America in gynecologic electro-therapeutics, but the impetus to these investigations came from abroad, and in this department we have followed rather than led.

That there has been gross exaggeration, both conscious and unconscious, as to the magic effects of electricity in the dispersion of fibroid tumors, is undeniably true. Notwithstanding all this, however, we have cause for congratulation that electricity has proved so efficient a remedy in so many of these cases. Among those who have recorded their observations and the results of their work in this department of electro-therapeutic work are Engelmann, Massey, Martin, Mundé, Grandin, Gunning, Goelet, Bigelow, Kellogg, Hutchinson, and not a few others. The revival of the use of static electricity in France some dozen years ago led to the discovery of what is now well known as the static induction current of Dr. Wm. Morton. This discovery is entirely American, and while it yet remains for us to definitely differentiate between it and the ordinary current of induction as regards therapeutic effects, it is undoubtedly a suggestion of value and widens the utility of the Holtz machine. The use of electricity in the treatment of extra-uterine pregnancy is another most important advance in electro-therapeutics that is entirely American; and were accidents of gestation of this kind an everyday affair instead of comparatively infrequent, the discovery of the great value of electricity in their treatment might well be considered one of the most important of recent therapeutic procedures.

It is unfortunately true that there are many who still decry the method and advocate the use of the knife in those early-discovered cases in which electricity is indicated.

They cannot deny that, if detected before the third month, electricity is capable of destroying the fetal life without pain or danger to the mother. But, they say, a foreign body is left, therefore the knife should be used; and this in the face of proofs innumerable that no possible harm results from the contents of the fetal sac, which become encysted and quickly absorbed. Two assertions are often made by the opponents of the electric method of treatment: 1st. That it is almost impossible to detect the condition before the third month, and that many supposed cases of extra-uterine pregnancy are not cases of pregnancy at all. 2d. That electricity is by no means sure to destroy the fetal life.

In reply to the first of these, I have this much to say: A patient comes to you with a cessation of menstruation of two or three months' standing, associated with paroxysms of pain with or without a slight show of blood. On examination you distinctly feel a slight enlargement along the line of the Fallopian tube. It may or may not be a case of tubal gestation, but you treat it with electricity, and the pain immediately ceases and the tumor quickly disappears. What could it have been? Certainly not an ordinary cyst or solid tumor, for these do not disappear in this way. The only rational conclusion is that it was an ectopic gestation—the only possible condition that would thus readily resolve itself under the electric treatment. In regard to the second objection, the difficulty has been that the faradic current is too often used to the exclusion of the galvanic. It is a great mistake to rely on the faradic current, since it is far more inefficient in its destructive properties than is the galvanic.

It possesses in equal degree neither the physical, chemic, nor physiologic effects of the galvanic current, while the mechanical effects are common to both currents. The galvanic current always kills. In the sixteen cases of extra-uterine pregnancy that have come under the personal observation and treatment of the writer, the galvanic current was exclusively used, and always with success.

CONCLUSIONS. — The progress of electro-therapeutics has been neither rapid nor uniform; it has been marked by alternations of eras of extravagant faith and activity with eras of equally extravagant distrust and neglect. Though often in advance of, and unaided by, physiology and pathology, it has been so closely dependent on the mechanical contrivances for generating and controlling the electric current that it has necessarily risen and fallen with the progress of mechanical art, and to a certain extent has shared in the fluctuations of electro-physics. Beginning with the mythic procedures of the Roman physicians with electric fishes, it had long slumbered in the forgetfulness of ages, when it was revived in the eighteenth century by the experiments with frictional electricity and the great discovery of Galvani. The interest thus aroused by galvanism and the invention of the voltaic pile rose to a height of enthusiasm that led to the belief that the problem of therapeutics was solved forever, until from repeated failures and disappointments there ensued a reaction of indifference that for many years was only disturbed by the birth of electro-puncture and by experiments in electro-surgery.

The discovery of induction and the modern improvements in galvanic batteries have inaugurated a new revival of electro-therapeutics in which the enthusiasm of the profession, rendered skeptical by past history, but now convinced by unequivocal demonstration, has been slowly and reluctantly enlisted. This last revival, it is safe to predict, will be as much more extensive and permanent than any of its predecessors as its growth has been more gradual and scientific. Thus, after more than a century of experiment and failure, electro-therapeutics is beginning to realize something of the hopes of its early supporters. The tardy fulfilment of the promises of its youth are due not so much to the prejudices of men of science as to the necessary mechanical difficulties in the way of its employment, and to a want of knowledge of the indications for its use and the method of making the applications. The prejudice of which so much has been said was the natural result of the many failures of electricity, and of the fact that, like many other excellent agents, it was for a time almost exclusively in the hands of charlatans.

The history of electro-therapeutics, with its varied alternations of failure and success and its ultimate triumph, may not inaptly be compared with the incoming of the tide upon the shore, where, although each successive wave apparently recedes as far as it advances, the level of the water is ever gradually rising with a force at once sure and irresistible.

OCCLUSION OF BOTH COMMON ILIAC ARTERIES; GANGRENE; DEATH.

BY HUGH B. MEREDITH, M.D.,
FIRST ASSISTANT PHYSICIAN TO THE STATE HOSPITAL FOR THE INSANE, DANVILLE, PENNSYLVANIA.

IN offering the following report, no new light is thrown upon the etiology, pathology, or treatment of embolism and resultant thrombosis of the larger vessels; but symmetrical gangrene resulting from embolism of the aorta at the iliac bifurcation is of such infrequent occurrence as to be worthy of notice. Rosenstein[1] says that "clots in one or more large arteries of the lower extremity are fortunately of rare occurrence," and alludes to one case that came under his observation, in which mortification of the whole leg developed. Probably the most frequent point of lodgment of an embolus in the lower extremity is at the bifurcation of the popliteal artery, resulting in dry gangrene of the leg that may extend to within a few inches of the knee. A simultaneous occlusion of the arteries at this point in both limbs is less likely to occur, but is within the bounds of possibility. The following case is one in point:

E. C., forty-eight years old; a female; married, having borne two children; a school-teacher, in moderate circumstances; was admitted to the State Hospital for the Insane, November 20, 1888, suffering from melancholia of about three weeks' duration. There were no known hereditary tendencies, her insanity being attributed to excessive mental work and financial losses.

She was of medium size, fairly proportioned, and somewhat emaciated, with a sallow complexion. Her tongue was coated and her bowels were torpid. The pulse was 84, irregular and intermittent; a mitral regurgitant murmur was heard. There was a history of palpitation and of vertigo. Menstruation had been absent for some time. A history of rheumatism could not be elicited. There was delusional melancholia of a religious type.

As the physical condition improved, the mental condition likewise improved, and at the expiration of four months the woman had so far regained mental health as to be considered convalescent. There remained, however, frequent headaches, accompanied with vertigo, disturbance of digestion, vomiting, diarrhea alternating with constipation, and indefinite subjective symptoms mainly attributable to faulty heart-action. Menstruation was reestablished. The patient gained flesh, but remained pale and anemic.

On the morning of April 19, 1889, when called for breakfast, the woman was found helpless upon the floor, having apparently risen as usual to dress. When seen a half-hour subsequently, consciousness was preserved, though the patient was confused and restless, the face flushed and expressive of great

[1] Ziemssen's Encyclopedia of the Practice of Medicine, vol. vi, p. 124.

anxiety. Aphasia was not observed; the tongue was deflected to the right; the pupils were normal; sensibility and motility of the left arm, as compared with the right, were much impaired; the woman was, however, able to execute the coarser movements. There was complete paraplegia; the lower extremities were cold and marked up to the knees by a death-like pallor. The left leg was anesthetic to the level of the knee; the right leg to the foot. The pulse was 60, very weak and irregular. Prostration was decided. Frothing at the mouth and a slight convulsive movement limited to the upper extremity had been observed.

Occlusion of the abdominal aorta at its bifurcation, probably by an embolus, a small embolus also being lodged in the brain, was diagnosticated. Spiritus frumenti and ammonium carbonate were given every two hours until reaction was established; external heat was applied to the lower extremities. By eight o'clock in the evening the woman had rallied from the shock and felt better; she ate a slight dinner; the bowels moved naturally; the urine was dark and heavy from admixture with blood; the right pupil was dilated; the pulse was increased in frequency and tension.

On April 20, power in the upper extremities had been partially regained. The lower extremities assumed a dark, mottled appearance, and remained cold and paralyzed.

On May 3, lines of demarcation appeared to be forming near the middle of the left leg and at the junction of the middle and lower thirds of the right leg, as revealed more particularly by differences of temperature. The distal portion was cold, black, or mottled with pinkish points and blotches, which were somewhat warmer. Above, the limbs were swollen and painful, but the hyperesthesia was more intense in the gangrenous parts, the pain being likened to the "boring of worms," and being much intensified by the weight and warmth of the bedding.

The appetite was poor, the tongue dry and brown, and the pulse 68, small and weak. The dejecta were passed incontinently. Insomnia was marked. Speech was incoherent and delusional.

On May 4, there occurred a sudden extension of the gangrenous process on both limbs to the knees, and on the right posteriorly to the sacral region, where there was a similar process in an area several inches in diameter. Large bullæ formed on the calves and ruptured, discharging bloody serum and leaving excoriated patches. The pulse was 72, weak and intermittent. The patient gradually failed, and died May 20th, four weeks from the beginning of the attack. The days preceding death were marked by moderate elevation of temperature, frequency of pulse, diarrhea, and paralysis of the sphincters.

At the autopsy, twenty-four hours after death, the gangrene was found to extend on the left side to the knee-joint, above which the limb was merely slightly edematous, with engorgement of the superficial vessels. On the right side the gangrenous condition extended along the posterior aspect of the thigh, joining a similar patch about six inches square over the sacrum. The anterior aspect of the thigh was edematous. At the upper inner margin of the right popliteal space there was a large cavity containing several ounces of clear, oily fluid, much resembling olive oil, and offensive in odor, evidently a collection of liquefied fat.

The heart was evidently enlarged by dilatation of the auricles, the walls of which were thinned, and their cavities filled with ante-mortem (terminal) clots. The left auricle was distended with a clot that extended through the pulmonary veins into their smaller divisions in the lungs; within the auricle the center of the clot was broken down into a cheesy mass, offensive in odor, and resembling the contents of a pus-cavity. The right ventricle contained small, adherent clots, entangled in the chordæ tendineæ. The left ventricle was empty and contracted, the heart evidently stopping in systole. The aorta contained a white clot, extending from the valve to beyond the arch. The mitral valve was thickened, the seat of plates and nodules of calcareous matter, and partly bound down; the mitral ring was rigid, and contracted to about one-third its normal diameter, barely admitting the extremity of the little finger, and giving evidence of decided insufficiency and stenosis. The remaining valves and orifices appeared normal. The heart was soft and pale; the walls of the ventricles were apparently unchanged. There was no degeneration of the arteries. Spleen and liver were engorged.

The right kidney was about one-half of the normal size, much nodulated, irregular in contour, and of a dark-gray or slate color. The capsule was moderately adherent. Section revealed numerous old hemorrhagic infarctions; the cortical substance was generally thinned and wanting in the situation of the cicatrices; in several places the base of a pyramid was apparently in immediate contact with capsule. The left kidney, rather larger than the right, presented the same general appearance, though in a minor degree. One pyramid was of a yellowish color, and had evidently undergone fatty degeneration. The abdominal aorta was found to be normal as far as its bifurcation, beyond which the walls of the arteries were black in color, showing advanced gangrene, and their caliber was obliterated by firmly-clotted and partly-organized blood. Beyond the division of the common iliacs the contents of the vessels were firmly organized, the vessels being almost converted into fibrinous cords; on the proximal side of the iliac bifurcation the contents were less highly organized, but yet firmly coagulated. The firmness of the clot was more pronounced in the right common iliac and its branches than in the left. The iliac muscles were dark-colored and evidently becoming gangrenous.

The brain was not examined, for want of permission.

The apparent cause of the occlusion of the arteries in the case reported, based upon the sudden inception, the completeness, the bilateral character, the gangrenous condition of the common iliac arteries, associated with extensive valvular disease, seems to have been the lodgment of some detritus from the

heart at the bifurcation of the abdominal aorta, where by fibrinous accretions the embolus gained sufficient size to suddenly block the main divisions of the aorta, probably at the bifurcation of the common iliacs. The only modifying fact was the fairly well-nourished condition of the anterior surface of each thigh, which would seem to have been improbable were the profunda arteries implicated, the collateral circulation through the internal mammary or other accessory vessels being scarcely sufficient to maintain the requisite blood-supply.

The numerous infarcts of the kidneys would indicate the repeated detachment of cardiac emboli, so that possibly there was a simultaneous lodgment of fragments in the two femorals rather than at the aortic division. The limitation of the gangrene to the legs, as seen in the imperfect attempt at a line of demarcation, the subsequent sudden extension of the process up the thighs, and the gradually increasing degree of organization of the clot from the distal to the proximal extremity of the vessels, would favor this latter conclusion—stasis of the current favoring the formation of a thrombus between the original point of occlusion and the abdominal aorta, the completion of its formation being manifested by the extension of the gangrene.

One source of gangrene of the lower extremity that may extend to within a few inches of the knee, as already stated, is embolism of the popliteal artery at or just above its bifurcation. Another potent cause, as seen in senile gangrene, is slowing of the blood-current as a result of partial obliteration of the lumen of the popliteal arteries by atheromatous degeneration.[1] "The arrest of the circulation, from being partial may suddenly become perfect," in consequence of the formation of a thrombus, and then the gangrene will in a few days reach the knees, subsequently becoming moist. In neither the case reported nor in the following case was there a tendency to obliteration of the main vessels of the pelvis and lower extremity above the primary lesion, and this too, notwithstanding the existence of favoring circumstances. The report of the following case has been kindly furnished by Dr. C. B. Mayberry, in whose wards it occurred:

G. C., a male, seventy-four years old, was admitted to the State Hospital for the Insane November 21, 1889. He was of average height, of slender build, emaciated, and in feeble bodily condition; the pulse was weak and irregular. The respirations were 21; the temperature was 98°. A mitral systolic murmur was heard at the apex of the heart. The tongue was coated; the appetite was impaired; little food was taken in consequence of delusions of acute melancholia.

[1] Ashhurst: International Encyclopedia of Surgery, vol ii, p. 301.

April 17, 1890. Without any change in the general health, gangrene of the left foot developed, which gradually extended up the leg. The foot became cold, dry, and shrivelled, with patches of ulceration and slow sloughing, and with decided constitutional disturbance.

20th. The process had gradually extended, and the patient was slowly failing. There was no perceptible pulsation in the arteries of the leg or foot. The pulse was 120; the respirations 25; the evening temperature was 103°. Amputation was considered, but not deemed advisable, owing to the weak condition of the patient. Death took place at 8.45 P.M. on April 25th.

At the post-mortem examination of the foot, dry gangrene was found extending half-way to the knee. The popliteal artery in its upper part was found much diminished in caliber, one side of its wall being much thicker than the other, in consequence of the organization of an old thrombus. The crescentic-shaped lumen gradually became less marked and finally disappeared in the lower part of the artery, thus cutting off all circulation to the leg. An attempt at collateral circulation had been made by enlargement of the arteries about the joint. No further examination was made.

The feeble condition of this patient, the form of mental disorder, and the existence of organic disease of heart, would seem to have been favorable to an extension upward of the thrombotic process, so as to involve at least the entire femoral artery; but in this case, as in others, the gangrene was comparatively limited in extent.

Moore,[1] in describing symmetrical gangrene, says: "It may also be the result of embolism of the aorta at the iliac bifurcation—a cause which can be easily appreciated." If partial gangrene, as he describes it, can be produced by so potent a cause, even more extensive partial gangrene might have been expected to result, as in the case of E. C.; hence it is not unreasonable to refer the initial point of occlusion to the common iliacs.

Embolism of one branch of the abdominal aorta, while infrequent, is probably not so rare as embolism of both branches. The causation and train of symptoms are necessarily the same. The following case is also taken from the male records:

E. J., a male, sixty-three years old, was admitted to the State Hospital for the Insane February 22, 1884. He was tall, slender, much emaciated, and in poor physical health. The pulse was 96, small and regular. The appetite was capricious, owing to delusions respecting food. The man was subject to chronic diarrhea. On admission he was wildly incoherent, noisy, suspicious and afraid of others, sleepless, destructive, and uncleanly in his habits. He presented delusions mainly of a depressed nature, but showing the exaltation of manner usual in mania. In May, 1888, he had a mild attack of

[1] Loc. cit., p. 305.

pneumonia, from which he did not recover for many weeks. During May, 1890, he had a slight attack of facial erysipelas.

About 11 A.M., January 30, 1891, it was noticed that the patient was unable to use the right lower extremity, which was cold, and very soon presented a mottled appearance. Sensibility and motility were lost. The femoral artery was pulseless. Consciousness was preserved, the mental condition being unchanged. The entire limb and lateral half of the scrotum were involved, showing occlusion of the main artery, probably at the division of the abdominal aorta. No change occurred in his condition until 6.30 A.M., January 31st, when he suddenly expired.

There was no history of organic disease of the heart. On the contrary, the man was considered phthisical, no definite information being obtainable on physical examination, owing to the constant excitement under which he labored.

At the autopsy, thirty hours after death, the right pelvic region, the right lateral half of the scrotum, and the entire right thigh presented a dark, mottled appearance.

The right heart was normal; the left was enlarged. The cavities contained ante-mortem clots. The mitral valve was normal. The aortic leaflets were the seat of calcareous plates; the roughening of the surface and the presence of small vegetations afforded evidence of old endocarditis, the pathological condition permitting decided regurgitation and causing some obstruction. Atheromatous degeneration prevailed throughout the arterial system. The lumen of the colon was narrowed in many places, as a result of chronic colitis. The right common iliac artery was entirely closed by a blood-clot of firm consistence. Judging from the character of the occluding body, it was thought that the point of lodgment of the detritus or vegetation from the heart was at the division of the common iliac, where the thrombus that formed attained sufficient size to plug the vessels upon the distal side, and subsequently upon the proximal side as well, thus obliterating the lumen of the artery from its commencement at the aorta, and depriving the entire right half of the pelvis and the right lower extremity of blood. The brain was not examined.

The cause of the rapidly fatal termination may have been heart-failure, due to a sudden increase of resistance in the blood-current thrown upon a badly impaired organ, though the same increase of resistance may have given rise to an apoplexy, a plausible theory in view of the weakened condition of the arterial vessels consequent upon atheromatous degeneration.

Had not this case pursued so rapid a course as a result of a secondary accident, without doubt it would have eventuated in moist gangrene of the entire limb, and have terminated by septic poisoning.

In the cases reported the form of insanity was melancholia, a disease characterized by a weak and sluggish circulation, and which, when associated with grave, organic heart-lesions, or a more frequently occurring degeneration of the coats of the vessels to which the insane are peculiarly liable, presents sufficiently potent factors for the development of the accident.

The frequency of these cases among a comparatively small number is suggestive of a marked predisposition of the insane to embolic occlusion of the arteries, an inference even more patent when we include in the category localized softenings dependent upon embolism of the cerebral vessels.

ACTINOMYCOSIS.

BY WM. P. McGOVERN, M.D.,
OF CEDARBURG, WIS.

THE number of cases of actinomycosis seen and published has increased every year since the appearance of Ponfick's first contribution to the *Berliner klinische Wochenschrift* in 1879, but there has not been much added to our knowledge of its nature, cause, and treatment. The greater number of cases have been reported by German authors, and as late as 1885 W. T. Councilman, in describing this disease, said that no case of its occurence in man had been recorded in the United States. In England the first case of removal of the growth has been reported during the current year. That actinomycosis was met with as frequently previously to 1879 as since, no one will question, and that it occurs as frequently elsewere as in Germany is beyond doubt.

The case related in this paper, and two cases treated by Dr. N. Senn, and fully described in his *Principles of Surgery*, have originated within a radius of thirty miles during the last five years. Dr. J. B. Murphy, of Chicago, has treated five cases of actinomycosis, his first case being the first recognized in man in the United States.

Actinomycosis is a parasitic disease caused by a fungus that was at first classed among the cladothrix variety of algæ, and later was placed among the leptothrix group, and was viewed as a metamorphosed form of the leptothrix buccalis. The fungus is supposed to be found in nature, growing upon certain cereals as barley, rye, and corn; certain it is that a metamorphosis takes place in this fungus after entering the human body. The arthrosporous schizomycetes are noted for pleomorphism, and especially is this true of the cladotricheæ, which, in one and the same life-history, present the forms of cocci, bacteria, bacilli, leptothrix-filaments, spirilla, and vibriones; they may be parasitic to a higher organism and assume new and different forms. Pleomorphism may account for the confusion that seems to exist in regard to this fungus, as to whether

it is a cladothrix, leptothrix, hyphomycete, or some "higher form of bacteria."

The actinomyces-body or spherule is about the size of a millet-seed and usually whitish-yellow in color, and is not found floating in true pus, but in a gruel-like matter which is perfectly odorless, except when contaminated with some extraneous matter. We know nothing of its manner of emigration in the human body, but about its mode of entrance we have the discovery of Israël and Pratzsch of these spherules in the cavities of carious teeth. In my case there was a spherule in the cavity of a carious tooth, and two within an abscess-sac attached to one root.

Actinomycosis has been found in almost every organ and portion of the body, but in the greater number of cases the disease has been located in the neighborhood of the mouth. Carious teeth, lesions of the mucous membranes of the mouth, respiratory tract, and alimentary canal, have allowed this parasite to enter, as also have lesions of the integument, giving rise to a primary actinomycosis of the skin. It has been discovered in the heart, lungs, liver, kidneys, brain, bladder, prostate gland (?), peritoneum, pleura, and spleen—organs and membranes to which it gained entrance through the blood.

The disease is an exquisitely chronic one (at no time is there true systemic infection) characterized by a granulation-tissue proliferation. Unlike the true systemic infectious diseases, tuberculosis and syphilis, the lymphatic glands are not involved, except by simultaneous suppuration induced by the specific excitant bacteria of suppuration.

The prognosis is very unfavorable. When found in certain organs, as the heart, liver, spleen, brain, and kidneys, the disease is considered fatal; but when located on the face or neck, or as a primary actinomycosis of the skin, the prognosis is most favorable.

Up to the present time, and with varying results, the treatment of actinomycosis has been purely surgical. In many of the cases operated upon the disease has recurred on account of failure to remove all of the diseased tissue. The only treatment with drugs—without resorting to operative procedure—is that first used by Dr. Köttnitz[1] in four cases of actinomycosis of the cheek and neck; all four recovered. The drug used was the nitrate of silver stick, and the diseased tissues were cauterized freely and frequently until all traces of the disease had disappeared. The first case in which this treatment was used was one of reappearance after several attempts at removal by operation. When the disease is situated in certain organs of the body in which surgical treatment is not applicable, nitrate of silver would also be inadmissible. The following case will illustrate this method of treatment and its good result.

The patient, J. H., was first seen August 30, 1891. Examination revealed a swelling occupying the angle of the lower jaw on the right side. This swelling, the size of half a lemon, was dense to the touch, gave no fluctuation, and was surrounded by an ill-defined mass of infiltrated tissues, extending in all directions, but more particularly downward and backward over the sterno-cleido-mastoid muscle. The skin was red over the central portion of the tumor, but there was no tenderness on pressure. The mouth and teeth showed evidence of lack of attention, and the last molar on the right side was carious, but had not ached.

On July 27, 1891, the patient first noticed a bean-like swelling opposite the angle of the jaw. This steadily increased to its present size, without becoming painful, tender on pressure, or giving rise to fever. The patient's condition was good, though he had of late lost considerable in weight. No positive diagnosis being made, expectant treatment was adopted.

On September 7th, a soft spot was found at the center of the tumor. Incision evacuated about one teaspoonful of a gruel-like matter, containing numerous yellowish-white bodies. A diagnosis of actinomycosis was then made, which was soon confirmed by microscopic examination.

The patient was seen daily either by myself or by my associate, Dr. E. R. Moras, and the abscess-like cavity was syringed out, with either a solution of tincture of iodine in alcohol, or a 1 : 1000 solution of bichloride of mercury, or a 5 per cent. solution of carbolic acid, and packed with gauze. I extracted the carious tooth on the 16th. Two actinomyces-bodies were found on one root, and one other was lodged in its cavity.

On September 24th, the cavity in the cheek, and as much of the surrounding indurated tissues as could be reached, were cauterized with the nitrate of silver stick. When the patient returned on the 27th, the change was surprising; the cavity was practically obliterated, and already the induration was markedly less. A mass of spongy granulation-tissue protruded from the wound, and by pressure a slight amount of the characteristic actinomycotic fluid could still be obtained. The cauterizations were repeated every third or fourth day. The improvement was unexpectedly rapid and pronounced. The last application was made on November 8th; on November 15th the patient was discharged cured, only a small scar remaining.

The patient has been seen several times since, and nothing suspicious has as yet developed.

Dr. Köttnitz states that in all of his cases there were defective teeth on the affected side, and all the patients had neglected the proper care of their mouth and teeth. In my case this was also true, and the carious tooth was undoubtedly the avenue through which the parasite gained entrance into the tissues. This fact suggests scrupulous cleanli-

[1] Deutsche med. Wochenschr., September 3, 1891.

ness of the mouth and teeth as the chief prophylactic measure.

A sufficient length of time has not elapsed to say that the disease will not recur, but up to the present time (December 14, 1891) there has been no sign of recurrence. The result obtained from this treatment has been such as to warrant a further trial in cases of actinomycosis in which the disease is situated in portions of the body accessible to cauterization.

"The favorable action of the remedy is probably to be found in a peculiar susceptibility of the actinomyces to the action of certain drug-reagents to which probably the nitrate of silver belongs, or the cauterization gives rise to an active inflammation with all its consequences, which is of importance in fighting this foreign element." (Köttnitz.)

In the case reported there was no sign of active inflammation, except when healthy, non-infiltrated tissues were cauterized; pain was comparatively slight, and the cauterized reticulated granular mass was usually thrown off on the second day after the application. The nitrate of silver seems to have some selective action upon the fungus and the granulation-tissues within which it grows, as the normal tissues were but seldom attacked, even when the caustic was used very freely.

There is no evidence of the transmission of actinomycosis from man to man, or from animal to man; and as the disease is almost always local, the danger of infection from the meat of diseased animals is not very great, and if the precaution of thorough cooking is taken, as in trichina-infected meats, the danger is *nil*.

CLINICAL MEMORANDA.

THE FUNCTION OF THE SEMICIRCULAR CANALS.

BY E. D. SPEAR, M.D.,
AURAL SURGEON TO OUT-PATIENT DEPARTMENT BOSTON CITY HOSPITAL, AND TO THE MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY.

HÖGYES[1] believes that the semicircular canals of the ear, with the vestibular branch of the auditory nerve, are a peculiar end-apparatus regulating the movement of the muscles of the eye, and probably of the other muscles of the body, for the maintenance of equilibrium.

In order to put this to a test, and decide whether there is to be found any direct (or indirect) connection between the organs to which I apply the name peripheral space-organ (namely, the semicircular canals of the ear) and the muscles of the eye, I chose certain cases from among my patients who made complaint of dizziness, or whose gait in walking showed disturbances of equilibrium, and asked my friend, Dr. H. B. Chandler, of Boston, to examine their ocular muscles.

The result of our mutual investigations caused us to come to the definite conclusion that in regard to the sixth (abducens) nerve there was a most intimate connection with the vestibular branch of the auditory nerve. All dizzy patients had exophoria of varying degree dependent upon the amount of intensity of the peripheral irritation.

Without entering into the details of the cases examined, or touching upon other important and interesting questions, I transcribe enough data to encourage one to continue these interesting observations, and I suggest for consideration two typical cases recently observed.

First, a strong, able-bodied man, exposed to inclement weather, and, in consequence of repeated wettings, developing a post-nasal hypertrophy of the right turbinated body, presented himself for relief of intense pain in the corresponding ear. He was found to have a severe form of otitis media acuta, with a small perforation of the drum-membrane, and oozing of the serum from the engorged bloodvessels of the tympanum. The patient was in great agony from the pain in the ear and head, was very unsteady in his gait, staggering forward and to the right; he complained of great dizziness, and was at times nauseated. He also appeared to have a complete ophthalmoplegia interna on the right side, due to what at first seemed a paresis of the internus muscle. The demonstration of this state of the ocular muscles needed no prism, because the divergent eye could not be brought to the median line even when its fellow was strongly converged. There was, necessarily, diplopia.

In order that this highly interesting and deeply instructive case might not lose its effect upon its observers—among whom was my colleague and friend, Dr. C. J. Blake, of Boston—I avoided using any means of treatment which might not be clearly understood; and, as the exigency demanded immediate relief for the very severe symptoms, I used the simplest means at hand. A large tampon of absorbent cotton dipped into a 4 per cent. solution of cocaine hydrochlorate was carried deeply into the right nasal fossa. This was allowed to remain in position ten minutes, was then removed, and nothing more was done. At once, upon the removal of the cotton, the patient converged his eyes normally, could walk in a straight line, had complete relief from pain, and from that hour became convalescent.

It appeared clear that we had here a closed Eustachian tube, a middle ear acutely inflamed and filled with fluid pressing upon the oval window, and through it upon the ampullar enlargement of the horizontal semicircular canal. Irritation was thus probably transferred through the vestibular branch of the auditory nerve to the space-center, and through it to the terminal fibers of the sixth nerve, causing a stimulation of the muscle supplied by it, and bringing about the divergence simulating a paresis.

Dr. Myles Standish, an oculist of this city, kindly sent me a patient afflicted with dizziness. He came wearing strong prisms that fully corrected the divergence and removed the double vision, but did not relieve the dizziness or the titubation. I found great swelling of the right turbinated body, a closed Eustachian tube, depressed cicatricial membrana tympani, with fair hearing. These were results of past suppurative inflammation of

[1] Pflüger: Archiv f. Physiologie, Bd. xxvi. The Pathology of Ophthalmoplegia, by W. J. Collins, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng. Amer. Journ. Med. Sci., November, 1891.

the middle ear, with restoration of the normal functions of the ear upon recovery, but not with an entirely normal condition of the parts of the ear concerned in protecting the labyrinth from undue pressure (capsular ligaments and muscles of ossicles). After local treatment of the middle ear and nose, the eye-symptoms improved, and after several applications the patient voluntarily laid aside the prisms because, as he said, they made him see double.

POISONING FROM HOMATROPINE USED IN THE EXAMINATION OF REFRACTION.

BY THOMAS R. PORLEY, M.D.,
SURGEON NEW AMSTERDAM EYE AND EAR HOSPITAL; PROFESSOR OF OPHTHALMOLOGY IN THE NEW YORK POLYCLINIC.

ALTHOUGH the occurrence of toxic symptoms from the frequent use of a strong solution of sulphate of atropine in the eyes has frequently been observed, I am not aware of any such effect having been produced by the use of homatropine. I have, therefore, thought it worth while to report the following case, in which the use of homatropine for the purpose of paralyzing the accommodation was followed by alarming symptoms of poisoning.

A. L., seven years old, was brought to me for examination of her eyes August 26, 1891.

$$V = \frac{20}{XXX} \text{ in both eyes, and with } + 1 \text{ D. } \frac{20}{XX}.$$

The ophthalmoscope, however, showed more H., and a 2 per cent. solution of homatropine was ordered to be put in the eyes every fifteen minutes for an hour, and the child to be brought again the next day. The day following, the drops having been used as directed, the eyes were again examined. The pupils were dilated *ad maximum* and there was complete paralysis of accommodation. H. now = 2 D. $V = \frac{20}{XX}$. A glass of + 2 D. was ordered, and the child directed to return in a week or so later.

The patient was in my office for an hour, but up to that time no effect of the homatropine other than that produced upon the eye was observed. On September 4th the child was again brought to me by her parents, who gave the following account of her behavior soon after leaving my house: On the way home she became very restless and nervous, her face was flushed a deep scarlet, and both the mind and senses were very much affected. Her ideas, which were very rapid and connected at first, became incoherent and extravagant, and she saw many imaginary objects. By the time they had reached their home her gait was staggering, the hallucinations more marked and constant and accompanied by mild delirium. Her parents, now decidedly alarmed, sent for their family physician, who made a diagnosis of belladonna-poisoning, and under the influence of some remedy given by him (probably some preparation of opium) there was an amelioration of the symptoms, with a renewed tendency to delirium and delusions, however, toward night. The following morning she was much better, but all that day was very nervous and displayed a tendency to the return of the hallucinations; and it was several days more before she had entirely recovered her usual health.

The prescription was compounded from Merck's preparation by a very careful and reliable druggist, who has kindly made for me a computation of the amount of homatropine contained in each drop of the solution. From Barnes's standard eye-dropper each drop of the solution equalled $\frac{1}{104}$ grain. From Barnes's standard medicine-dropper each drop equalled $\frac{1}{60}$ grain. The latter was most likely employed, since it is the one commonly in use. If we now take into account the number of instillations made in both eyes during the course of the hour—eight in all—we shall have as a result $\frac{8}{120}$ grain of homatropine contained in the amount of the solution employed.

It would be difficult, if not impossible, to ascertain the amount of the drug absorbed either directly or by the entrance of some of the solution into the throat through the tear-passages.

Whether a 2 per cent. solution is a stronger one than is usually employed I do not know. It is, however, the strength that I commonly use, and this is the first instance in which any disagreeable symptoms have ensued. The experience afforded by this case shows, however, that poisoning may result from the use of homatropine, and should lead to greater caution in its employment. I would suggest as a precautionary measure that in all cases in which a strong solution of homatropine is used, pressure should be made over the lachrymal sac for a few seconds after each instillation in the eye, to prevent the solution entering the throat by this channel.

MULTIPLE SARCOMA.

BY S. D. SWOPE, M.D.,
OF MARION, KY.

ON February 1st, I was consulted by S. P., a colored girl nineteen years of age, unmarried, living in the country in a healthy locality. She is the mother of one child six months old, which, to all appearances, is in good health. Her parents were healthy, had reared a large family, and there was no history of syphilis, tuberculosis, or carcinoma in the family. The patient was of medium height, well nourished, and intelligent. At the time of her first visit she was suffering from a tumor, about the size of a walnut, hard and tense, irregular or nodulated in form, with slight diminution of pigmentation over its surface, located on the ulnar border of the palmar surface of the left hand over the abductor minimi digiti. It was supposed to be caused by rubbing on the washboard. The tumor had first been noticed two weeks previously, attention having been first attracted to it by pain; since that time it has grown to its present size. I suspected sarcoma, but from the age of the patient and the history I thought I might possibly have to do with some deep-seated inflammation, and directed the application of warm fomentations and an early report to me. There was at this time no enlargement of the glands of the arm or of the axilla.

Ten days later I saw the patient again, and found the tumor much enlarged, about the size of a hen's egg, tense, hard, nodulated, and very painful. There was still no enlargement of the axillary glands. The patient had an anxious expression, and had lost much flesh. The temperature was normal; there was inability to sleep on account of the pain, which was constant and

gnawing. I gave morphine to insure rest, and advised immediate amputation of the hand, or as much of the same as I deemed necessary after examination under chloroform. Operation was refused. Eight days later I was allowed to operate, the pain having become almost unbearable, even under large doses of morphine. The axillary glands were not enlarged at this time. With the assistance of two medical friends the patient was anesthetized, when, on examination, the disease was found to have extended to such an extent that an attempt to save any part of the hand was deemed inadvisable. After applying an Esmarch bandage, the tumor was incised, and was found to be composed of an aggregation of nodules, with broken-down tissue disseminated throughout, the disease penetrating to deeper muscles and fascia. The arm was amputated at the junction of the middle and lower thirds of the forearm. The patient reacted nicely, and did unusually well until the ninth day, at which time she was sitting up, free from pain in the stump, with good appetite; but she complained of pain in the left intercostal region. There was no cough, but the pain was increased by deep inspirations. Ten days later (nineteen days after the amputation) I removed all dressings from the stump, found it completely healed, and apparently healthy in condition, the boric acid dusted on after amputation coming away dry, and the catgut ligatures and sutures having been absorbed. The patient now complained very much of pain in the chest, the axillary glands were enlarged, but there was no evidence of tumors about the chest.

Death occurred on May 1st, great dyspnea having existed during the last two weeks of life. The body, viewed post-mortem, was much emaciated. Three axillary tumors, as large as walnuts, were found, and some twenty-five or thirty nodules were seated over the chest, ranging in size from that of a walnut to the smallest. They were hard and tense, and attached to the skin. A tumor as large as a filbert had sprung up on the ulnar side of the stump. No further dissection was allowed, and no microscopic examination was made.

I was especially impressed with two features of this case: the age of the patient, and the rapidity of the recurrence of the disease after amputation of the limb.

VOLVULUS FROM VIOLENT EXERCISE; LAPAROTOMY; DEATH.

BY E. V. PENNINGTON, M.D.,
OF WHITESBURG, TENN.

MISS M., eighteen years old, was seized with severe abdominal pain at three o'clock in the morning of April 9, 1891, after having turned somersaults upon a bed in the yard the previous evening. The usual means failed to relieve the pain; nor did purgatives succeed in overcoming the obstinate constipation that existed. The stomach was non-retentive. Mechanical obstruction of the bowel, dependent upon intussusception, was suspected. Ordinary treatment not availing, I was consulted for a surgical opinion. The abdomen had become tympanitic, and was sensitive to manipulation. An anesthetic was administered, and, after careful examination, I concluded that we had to deal with an intestinal twist located near the ileo-cecal valve. I placed the patient in the most favorable position and used copious injections of warm water *per rectum*, conjoined with manipulation, but without affording relief. I then stated that surgical interference was necessary. Upon consultation with the attending physicians, however, it was agreed to defer the operation for thirty-six hours.

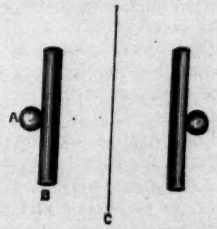
The condition of the patient not improving, the operation was finally undertaken. Dr. S. L. Pennington, Dr. King, and others assisted. An incision about four and a half inches in length was made through the linea alba. After tracing a considerable portion of the small intestine, I found the seat of trouble located in its lower portion, which was twisted upon itself, totally obliterating the lumen of the alimentary tube. Hard masses of feces were lodged against the obstruction. I corrected the trouble, washed out the abdominal cavity with an antiseptic solution, provided for drainage, and closed the wound. The patient was so weak before the operation that we feared heart-failure. By great care, however, the operation was brought to a successful termination. Eight hours later the heart began to fail, and in spite of all stimulation death took place.

The lesson of this case is the unwisdom of operative delay when urgent symptoms exist. My regret is that we did not operate while the patient had strength to bear the operation.

DESCRIPTION OF A NEW SUTURE.

BY ALEXANDER FULTON, M.D.,
OF PHILADELPHIA.

ROUND pieces of amber, about one-sixth of an inch in diameter, of various lengths, are used, perforated as required. Lead, glass, or any material that can be kept thoroughly aseptic may be used. Fine wire (silver preferred), after immersion in carbolized water, is run through the lips of the wound about half an inch from the edge when deep suture is desired, and one-third of an inch when more superficial suture is wanted. It is then put through the bar and clamped with a perforated shot. The line C represents the approximated lips of



the wound. The lips of the wound are thus by traction brought in perfect apposition. This method is especially adapted for wounds of the forehead, where there is so much tension. It always gives a neat result. I have seen every other form of suture cut through and leave the wound gaping. Sometimes the twisted suture so strangulates the tissues as to cause the part to slough off and leave an ugly scar.

Cremation.—The Japanese, who, in imitation of European nations, recently adopted the custom of burying, have returned to their original custom of burning the dead.

MEDICAL PROGRESS.

Successful Resection of Gangrenous Bowel for Incarcerated Inguinal Hernia.—STERN (*Berliner klin. Wochenschr.*, No. 41, p. 1011) has recorded the case of a woman, sixty years old, who came under observation after having presented, for a week, symptoms of intestinal obstruction, dependent upon an incarcerated inguinal hernia. An incision over the most prominent portion of the swelling in the right inguinal region confirmed the diagnosis and revealed the existence of peri-hernial suppuration. The incarcerated bowel was found gangrenous and perforated. Most careful antiseptic precautions being observed, the incarceration was relieved. The healthy intestine, on either side of the gangrenous area, was firmly grasped by an assistant and a section of bowel, about two inches long, was removed. The free margins of the remaining intestine were approximated by means of Lembert sutures, the first suture being applied at the point furthest from the mesentery, the distance being progressively halved with each succeeding suture. After satisfactory approximation, the wound was closed and dressed. The subsequent course of the case was surprisingly uncomplicated. Twenty-five days after the operation the patient was able to resume her household duties.

Ingravescent Cerebral Thrombosis and Hemorrhage during Pregnancy and Parturition.—HORROCKS (*Transactions of the Obstetrical Society of London*, 1891, xxxiii, 3, p. 201) has recorded the case of a deutipara, twenty-eight years old, who in the last month of pregnancy developed drowsiness, with rectal and vesical incontinence. The pupils were equal. There were no evidences of palsy. The urine contained neither albumin nor sugar. The heart-sounds were normal. The woman was delivered of a living child, but consciousness remained obscured. She constantly moved the right arm and leg, but the left leg was motionless and flaccid; the left arm was slightly moved. The knee-jerks were preserved and equal. The left pupil became larger than the right, though both were small. There was no apparent disturbance of respiration. After death, the veins of Galen, the right temporo-sphenoidal vein, and other cerebral veins were found occluded by thrombi. In the posterior portion of the right optic thalamus was a recent extravasation of blood, extending anteriorly to the internal capsule. A smaller extravasation occupied a corresponding situation upon the opposite side. In addition, there existed cystitis and right-sided suppurative nephritis. Heart and uterus were normal.

Catheterization of the Biliary Ducts.—In a communication to the Société de Chirurgie, FONTAN (*Revue de Chirurgie*, 1891, No. 12, p. 1122) has reported a case in which the biliary passages were compressed by an abdominal neoplasm, with the development of cholemia. Relief was afforded by cholecystotomy, followed by repeated catheterization. In a second case, in a woman with cholelithiasis, the obstruction to the flow of bile was relieved by cholecystotomy, followed by catheterization and lithotripsy. From his studies upon the cadaver and the living, Fontan concludes that catheterization of the biliary passages is an indispensable adjuvant to cholecystotomy. The maneuver may be exploratory or therapeutic. It may be necessary to dilate a stricture. The procedure, difficult when the biliary passages are normal, is easily carried out when there has been retention of bile. The operation adds no dangers.

Aspergillus-mycosis of the Antrum of Highmore.—ZARNIKO (*Deutsche med. Wochenschr.*, No. 44, 1891, p. 1222) has reported the case of a woman, fifty years old, who complained of a sense of nasal obstruction and discomfort, of an offensive odor of the nasal secretions, of a feeling of occlusion of the left ear, and of frontal headache. On rhinoscopic examination, polypoid hypertrophy of both middle turbinated bones was detected. After removal of the excess of tissue it was found easy to introduce a sound into the antrum of Highmore of the left superior maxillary bone. Irrigation of the sinus brought away a moderate quantity of detritus, which, upon microscopic examination, was found to contain mycelia and spores of the aspergillus fumigatus. A continuance of the treatment afforded ultimate relief to the patient.

For Snake-bites.—As the result of a careful review of the subject, HOFFMANN (*Deutsche medizin. Zeitung*, No. 72, 1891) recommends the following mode of procedure in case of snake-bites. In recent cases, a deep crucial incision should be made and the wound washed with a five per cent. solution of carbolic acid or potassium permanganate. A white-hot iron should be applied to the floor of the wound. A ligature should be applied for from four to six hours between the bitten point and the heart. Stimulants (ether, camphor, ammonia, alcohol) should be administered to counteract the paralytic effects of the bite. Antiseptics: five per cent. solutions of carbolic acid, one-tenth per cent. solutions of mercuric chloride, are to be employed to prevent putrefaction and septic infection. The general condition must be supported.

Reaction from an Aqueous Extract Obtained from Bacteria—ROEMER (*Wiener klin. Wochenschr.*, No. 45, 1891, p. 835) has recorded a series of experiments made with an aqueous extract obtained from cultures of the pneumonia-bacillus and the bacillus pyocyaneus. Three guinea-pigs inoculated six weeks previously with the fluid obtained from tuberculous lymph-glands died shortly after having received injections of the extract. The injections were in each case followed by elevation of temperature. Post-mortem examination disclosed, in addition to the evidences of tuberculosis, enlargement of the lymphatic glands, serous effusions, and injection of and hemorahage in various viscera. Injections in three healthy animals were followed only by elevation of temperature.

Bilateral Tubal Pregnancy.—At a meeting of German naturalists and physicians BOILEAUX (*Münchener medicin. Wochensch.*, No. 45, 1891, p. 801), relates the case of a young woman in which he removed the left oviduct, containing a two months' fetus. The patient recovered and three months later presented a right-sided tubal pregnancy. A second operation was also successfully performed.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment. When necessary to elucidate the text, illustrations will be provided without cost to the author.

Address the Editor: GEO. M. GOULD, M.D.,
1004 WALNUT STREET,
PHILADELPHIA.

Subscription Price, Including Postage in North America.

PER ANNUM, IN ADVANCE . . . . . $4.00.
SINGLE COPIES . . . . . 10 CENTS.

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

Address, LEA BROTHERS & CO.,
NOS. 706 & 708 SANSOM STREET,
PHILADELPHIA.

SATURDAY, JANUARY 23, 1892.

MEDICAL ASPECTS OF LIFE INSURANCE.

EVERY thoroughgoing Darwinian, SPENCER chief among all, is never weary of pointing out that modern civilization and sentimentalism works to the survival of the unfit, thus contradicting the plain trend of the ordinary laws of biological evolution. Devolution is in this way set against evolution, and instead of progressively strengthening and hardening the race, there are subtle forces sapping the vitality and rendering the more luxurious or civilized unfit for competition with the sturdier and biogenetically more obedient races. The great growth of civilized luxury is thus working to produce an ever-increasing army of social parasites, who, without aim or ability, live but to enjoy themselves, and make a miserable failure even of that. Indiscriminate charity, say the evolutionists, complicates the problem and exaggerates the natural supply of hangers-on, while the weak, the stunted, the diseased, the defectives of a thousand types, are nursed and coddled by protection and kindness to propagate their like, and thus handicap both the present and the future in the struggle for existence that is said to underlie all genuine elevation or even persistence of stock. Looked at from this standpoint exclusively, it has been contended that medicine itself is guilty of sustaining those in half-life, who, having received their death-sentence, postpone the execution, useless retainers, pensioners, and camp-followers of the much-enduring hard-pressed army of civilization. It has indeed been contended that had KOCH succeeded instead of failing to find an effective tuberculocide, he would thereby have done the world the greatest conceivable injury in licensing the weak-lunged, narrow-chested, deoxygenated failures to become the breeders of the coming race.

Now, however false and one-sided these views may be, and false and exaggerated we believe them, it is still always advisable to "heed the other opinion," know it, estimate it at its proper value, and meet it with logic and valor. We may shudder at the awful chasm such an unmoral and brutal lifting of the clouds discloses at our feet, but if the deep is there, the shudder itself renders us less steady of foot, and less possessed of aplomb. Happily, the confutation of this view is easy. If none other existed, the fact is patent that the workman's children are better breeders than those of the nabob. Parasitism begets in men debauchery and physiological degradation; in women, weakness, hysteria, and general good-for-nothingness. The children of the rich are "poor risks."

This, however, is but a too long preamble of a thought as to life insurance and the *rôle* that it is coming to play in our modern life. Is it, like luxury and vice, one of the great powers reversing the law of evolution and working to race-deterioration?

There can be no discussion as to the fact that hygiene, sanitation, increased comfort, and medical science have contributed to a lengthening of the average human life. But the life-insurance rates of premium continue so high that despite palatial offices, opera-bouffe salaries, and all that, it becomes a puzzle to presidents and boards what to do with the enormous surpluses constantly increasing.

Again, medical science has grown so shrewd that coming death may be long foreseen. Doubtful risks are refused, and thus the insured are those most certain of long life. Risk is thus reduced to a minimum and the surplus naturally grows.

The crux of the argument is reached when from the foregoing premises it is logically seen that with high premiums only the well-to-do and the long-to-live *can* insure. The poor—those on sentimental or religious grounds most needing insurance—*cannot*

afford insurance, and the unhealthy, or those of suspicious heredity or occupation—precisely those again that, from sympathetic or ethical reasons, should be most and best insured—cannot pass the examinations. Those children of the deceased parents who were rich enough and healthy enough to insure, are left with a competence that gives them a solid *locus standi* on the globe, and permits them again and always to multiply; whilst the poor workman and the "poor risk" who had neither the money nor the body to secure insurance for *their* children, early leave them sadly and doubly handicapped in the race of life.

Such undoubtedly *has been* the influence in the past. Need it, or will it be so in the future? Proofs are beginning to multiply that an entire change of front and of policy is, or is to be, undertaken. Some form of socialism is "in the air," fated to come. The life of the community is above that of the individual.

Already several counteracting forces are at work:

1. The shame and crime of dishonest "graveyard," infant, and "get-rich-quick" insurance (or *ass*urance) companies cannot blind the discerning to the fact that mutual and assessment companies, if properly watched and controlled, can give, and do give, trustworthy insurance at one-half or one-fourth the rates of the old companies. If, as need not happen, the company stops to-morrow, there is no exodus to Canada, and it has given value received up to date. There seems no reason why a precise amount of insurance should not be bought for a definite time, exactly as one buys so much coffee, house-rent, or a time-loan. And further, why should not the premium be dependent upon or in proportion to the medically-estimated probability of life for each case? At present it is either sheep or goats—two classes alone—but just as we all are a little wicked and a little good, so our chances of approaching death are of all degrees, and ratable in proportion.

2. Many companies are so transforming their business that it is becoming that of a savings-fund or investment company, the death-element an excluded, minor, or inconsiderable one.

3. Many companies that will not break the rule, wink at or whisper to their medical examiners to use not a little discretion. Albuminuria is becoming quite "physiological;" a little cardiac hypertrophy, a slight mitral murmur, a defective hereditary history, etc., are ignored. The printed rules stand, but the personal equation is given much play.

4. Companies are forming to insure those excluded by the rigid medical examiners of the billion-surplus companies, *i. e.*, accepting more doubtful risks, whilst yet other associations are forming to insure whoever will without any medical examination whatever.

5. Governmental insurance and systematic generalized pensioning is either under way or preparing to hoist anchor.

These and many more considerations that might be adduced, go to prove that "the bars are being let down." It is felt that, taken as a nation, our people are paying for their partial and unjustly classified insurance an excessive rate, and receiving therefor an insurance that discriminates unjustly between the classes and the masses. Individualism in insurance must have limits, and the common-health as well as the commonwealth, has its significance, duties, and demands. The tendency to socialistic legislation, the generalization, the extension of the pensioning system by corporations and by government, government insurance itself—all these and more, point to the fact that the health and death of every member of the community is of interest to every other member. Disease, if not self-interest, binds us all together and makes our own well-being depend upon that of every other. Preposterous as it may seem, the rates of premium are higher for the healthy and rich because the poor and unhealthy are excluded. A strange fact is coming to light: one of the richest of New York insurance companies, one that takes the most doubtful and dangerous risks, has one of the lowest death-rates. The life companies will soon learn that popularizing, broadening, and generalizing, making less stringent their medical examinations, will not only cheapen the premium, but strengthen the company and multiply its power for good.

Thus, sooner or later, one sees the medical aspect of a study, whatever it may be, comes uppermost. There seems no doubt of the ability of companies to lower the premium, or to lessen the rigidity of the medical examination, or to do both combined. As a skilled and directing chief officer of these great powers of modern society, the medical examiner for life insurance companies should use his encouraging influence toward extending to those less equipped with health or money, the beneficent action of the communal helping-hand in time of sickness and death.

PROGRESS IN PENOLOGY.

WE trust that every reader of THE NEWS will get and read the little volume, *Papers on Penology*, Second Series (and also the *Sixteenth Year-book*), issued by the New York State Reformatory at Elmira. We believe it may be had for the asking. It contains papers on the "Prisons of Great Britain," "Modern Prison Science," "The Philosophy of Crime and Punishment," "Criminal Anthropology," "New York's Prison Laws," "Prison Labor Systems," and "The Elmira Reformatory of To-day." It is to the last-named article that we especially direct attention. With just and noble pride the editor shows the advances made since the establishment of the institution in 1876, and how to-day it is a great compulsory educational establishment for improvable felons, in which, at the present time, some 1500 persons are undergoing a systematic process of redintegration and preparation for again becoming ordinary citizens. The indeterminate sentence is a basic principle. Likening, *not* identifying, crime and disease, it is held that the criminal should be kept under educational control until convalescent—that is, until morally, intellectually, and physically capable of earning a livelihood, and of maintaining a disposition consonant with the customs and necessities of society. The Reformatory prescription homologizes with the famous three R's, except that here it is the three M's that are required—Mental, Moral and Manual training. In 1890 the percentage of probable reformations was placed at 82.2, or 2147 of the 2611 paroled since 1876. The paroled are sent to the care of an agent of the Reformatory in the city or town in which they have secured employment, and he unobtrusively observes their behavior and mode of life for six months, and indorses their monthly reports to the general superintendent of the institution. If their conduct has been examplary during this time their absolute release from State service is authorized. The trade learned in the Reformatory assures them employment when on parole or discharged. In 32 distinct trades 953 men are now receiving instruction. Nearly 70 per cent. of those admitted were wholly illiterate.

Physicians will be most interested in the report concerning the systematic physical culture of dullards and weaklings—youths not idiotic, but too dull to take up work in the technological departments or to keep pace with the classes in school-study. To reclaim this class has been one of the severest tasks of the managers. The remarkable success following physical drill and exercise, massage, etc., led to an extension of the system to others, and to the establishment of a gymnasium. From March, 1890, to October 1, 1891, there were 212 under the peculiar gymnastic treatment. Of this number only 13 did not chew or smoke tobacco, and only 25 had not been addicted to alcoholic drink. One-fourth acknowledged themselves victims of venereal disease. The causes most frequently assigned for their selection for the physical culture classes were general debility, anemia, myalgia, physical degeneration, masturbation, scrofula, etc.

The outrageous Prison Bill of 1888 interdicted all machine labor for revenue, and how this apparent curse was turned into a blessing by the inauguration of military drill forms a pleasing episode, and, as in the case of the physical culture classes, an instructive example of the power of physical training to educe mental and moral results of the utmost good.

CONSANGUINEOUS MARRIAGES.

THERE is popularly a very widespread, and in its results, beneficial prejudice against the marriage of "blood relations;" but late researches tend to prove that this prejudice, though practically of good effect, is not based upon scientifically correct observation and reasons. Consanguineous marriages do not, as commonly supposed, tend to produce insanity and idiocy in the children, but according to the simple law of cause and effect they tend to intensify the qualities, healthy or diseased, good or bad, of the parents. If the two parent stocks have an inherited tendency to insanity, the offspring will have that tendency doubled. If the consanguineous parents are both tuberculous the children will have precisely the same, but no greater, probability of being tuberculous than if the parents had not been related. But if the consanguineous parents are without pathological taint, and both possess exceptionally desirable or peculiar characteristics, the offspring will inherit the exceptionally pure and strong type intensified and perfected. Stock-raisers take advantage of this law, and by in-and-in breeding they quickly bring a herd to surprising perfection in a short space of time.

But the danger of in-and-in breeding in human beings is that the pure, healthy stocks are hard to

find. We are less "normal" than our animals. Almost every family has some pathologic skeleton in the closet that cross-breeding keeps just below the threshold of observation, but which doubled with another and (in the same family) generally identical or similar abnormalism, at once appears exaggerated in the child, to work decay and ruin. The Persian and Egyptian kings habitually married their own sisters, and even their own daughters, without disadvantage to their offspring. Such instances and the success of cattle-raisers show us that the condemnation of marriage between relatives rests upon the fact of the impurity and generally pathologic condition of civilized man, and not upon any essential biologic law. In itself the blood-relationship is innocent, and under different conditions might even be utilized to elevate the quality of offspring and of the race. It is a sort of negative safety we secure by "cross-fertilization," that shows how near the danger-line humanity is running in its civilized race-degeneration.

Another, and a somewhat unexpected result of the scientific study of this subject has lately been made clear by the studies of two French investigators. They chose a commune of fisher-folk in which, from interesting conditions, there had been highly exceptional social segregation, and in which for two hundred years there had been constant intermarriage of cousins and the descendants of cousins. Of two hundred and sixty marriages occurring in five years, sixty-three were consanguineous. A study of the results of these marriages confirms the previous negative conclusions of other observers as to insanity, idiocy, physical defects, etc. But the new fact clearly established is the decided tendency of these marriages to prove sterile, though this defect did not seem to be transmitted to the children of the consanguineous parents.

It should be noted, however, that the people among whom these studies were made were seafaring, hardy folk, living under circumstances of simplicity and healthfulness, contrasting very sharply with the influences and habits of urban or more "civilized" people.

OBITUARY.

Henry I. Bowditch.—Surrounded by everything that should accompany old age, another veteran has passed from our ranks, and it becomes our duty to pay a tribute to his memory. Dr. Bowditch belonged to a remarkable group of American students that, between the years 1830 and 1840, returned from Paris laden with the new knowledge of physical diagnosis and enthusiastic followers of the numerical method as expounded by their master, Louis. Among them were Gerhard, of Philadelphia, *facile princeps* of American investigators in diseases of the chest; James Jackson, Jr., a young Lycidas, who died ere his prime; Power, of Baltimore, cut off in the fulness of his work; and there remain with us, happily, Oliver Wendell Holmes, the elder Shattuck, and Alfred Stillé. Truly a notable group of men! Dr. Bowditch's early work consisted in the introduction, through translations, of Louis's important works to the profession, and in the popularizing by a little work the methods of stethoscopy. He very early became interested in chest-diseases, and was associated with Dr. Morrill Wyman in the introduction of aspiration. To appreciate his position on this question in the year 1852 let anyone turn to *The American Journal of the Medical Sciences* of that date, and he will find our present ideas there expressed, many years before Dieulafoy's invention, and even prior to Trousseau's strong advocacy of paracentesis in pleural effusion. Unquestionably this is the work by which he is perhaps best, and will be longest known. All of his contributions to the subject of pleurisy, including his latest study of its relation to tuberculosis, bear the mark of the thoughtful, progressive mind. The question of the connection between soil and phthisis engaged his attention for many years, and he was a pioneer in advancing sound views with reference to the climatic and fresh-air treatment of tuberculosis. Sanitary problems occupied many of the later years of his life, and he rendered most efficient service as member of the National Board of Health. Personally, Dr. Bowditch had the charm of manner that so often accompanies an impulsive, generous nature. Even his faults were lovable, but his most characteristic trait was a boyish enthusiasm perfectly delightful to see as he advanced in years. There was, however, a sterner side to his nature, and the wrongs of the Nation and of the race found in him an implacable enemy. The New England spirit never dwelt in a more congenial frame, and in the great struggle of the Nation he was an enthusiastic abolitionist and a devoted supporter of the Union. Rarely has the profession of this country had a more representative member—high-minded, generous, and outspoken—than Henry I. Bowditch, whose name will long be cherished by those who regard such lives as the very leaven of the life we live.

SELECTIONS.

WANTED—A CURE.

THE influenza is once more in the air, wafted hither and thither throughout the habitable globe, a formidable, disabling, and fatal pandemic. Once more we are urgently asked on all sides, "Have we a specific? Can we offer a cure?" It is the old delusion and the everlasting and unreasoning, but excusable, impatience for the miraculous and the impossible. "Disease comes by Providence and goes by medicine;" that is a durable and popular formula. Of specifics for sale there are, of

course, a legion. To sell them is the business of the quacks; the Matteis, the Holloways, the Morrisons abound in specifics. There are a dozen available for cholera, for typhoid, for smallpox, for hydrophobia, for carcinoma—all equally plausible and equally useless except for commerce—and why not for influenza? But is there a specific for any disease? It is more than doubtful. The more we know of the nature and cause of disease, of its origin and life-history, the less we are inclined even to expect the discovery of specifics. Disease we know not as an entity, an enemy to be struck down with a club, or to be expelled by a drug, but as a process, the change of tissues and of fluids, the growth of a microbe, the proliferation of a cell, the secretion of a virus. We can modify the processes, we can lessen their virulent products, we can fortify against their worst effects; we can aid the evolution and perhaps guide it to health; sometimes we can arrest it; and often we can anticipate it. Thus we know how to ward off many diseases. Cholera, typhoid, smallpox, hydrophobia are enemies whom we can meet at the gate and forbid their approach. Deaths from either of these preventable diseases are, for the most part, violent deaths, inflicted by the ignorance of the people, the neglect of the sanitary authorities. *Populus vult mori.* In their search for specifics they parley with the enemy and lose their lives. Of influenza we know less than of most other infections; it is aërial, communicable from person to person, and along the lines of travel. For it, as for scarlet fever, we have only isolation as a preventive and palliatives as a treatment. Perhaps one day we shall know more; but there does not seem any likelihood of the discovery of a specific, and judging from numerous analogies it is far from certain that there is in this any ground for reproach. At any rate it comes badly from a public and from a generation which is content to leave Great Britain without even one Institute of Preventive Medicine, and which is left to an appeal for funds from a Lister and a Roscoe to found such an institute—in which lies a chief hope for further life-saving and the advance of preventive and curative knowledge—while millions are lavished on weapons of destruction, or the more obvious means of charitable relief to physical suffering; and finally on the purchase of fraudulent "specifics."—*British Medical Journal*, January 2, 1892.

THE MEDICAL GUILD.

"WHAT, then, are the remedies for these evils which stare the doctor in the face at the very threshold of his career, and embitter his life at a time when it should be radiant with promise?

"1. The limitation of the number of new doctors by the only legitimate measure—the rigid examination of all applicants for practice. Men may be allowed to obtain diplomas in this free country *ad libitum*. Colleges may multiply and send out their hordes of full-fledged doctors. But the medical profession must, for its own interests, but more even for the interest of the gullible public, continue to labor for State examinations. These will, if properly conducted upon some general plan, weed out not only incompetent practitioners, whose numbers, alas! are only too large, but they will also weed out incompetent colleges by holding the latter up to just reprobation in the exhibits of the rating of their students.

"2. The course of instruction in our colleges should be, and as a corollary of the first would be, made more thorough. The exaction of a preliminary education, too, would aid in lengthening the time necessary for the entrance into practice. Thus the over-supply of doctors would be decidedly inhibited, and this would inure not only to the good of the profession but also to the general good.

"A better *entente* should exist among the members of the profession. We should imitate the trades-unions, who pass general laws for the protection of their members, and who adhere to them to the bitter end. Worthy, struggling practitioners should be helped, just as the worthy mechanic is helped, out of a common fund, if his necessities arise, as they often do, from his strict adherence to the rules of the medical guild."—From an editorial in the *Dietetic and Hygienic Gazette*, Jan., 1892.

RAILWAY ACCIDENTS.

FROM the advance copy of the *Third Annual Report on the Statistics of Railways* for the year ending June, 1890, we glean the following interesting facts:

The total number of persons reported by railways as killed during the year was 6,334, and the total number reported as injured was 29,025. Of the total number killed 2451 were employés, 286 passengers, and 3597 were classed as "other persons." In this latter figure are included the large number of suicides. Of the total number injured 22,394 were employés, 2425 passengers, besides 4206 unclassified. If the number of employés killed be assigned to the total number, it appears that one death occurs for every 306 men employed on the railways, and one injury occurs for every 33 men employed. The largest number of casualties occur to men engaged directly in handling trains. Thus, while trainmen represent but 20 per cent. of the total number of employés, the casualties sustained by them account for 58 per cent. of total casualties. A passenger riding continuously at the rate of 30 miles an hour might expect immunity from death by railway accident for 158 years; but an engineer, a brakeman, or a conductor, under the same conditions, is liable to a fatal accident at the expiration of 35 years. The most common accident to which railway employés are liable results from coupling and uncoupling cars. The total number of casualties that can be traced to this source are 7842, of which 369 were fatal. Of this number trainmen sustained 6073 accidents, of which 265 were fatal. The most fatal accidents, however, result from falling from trains or engines, the total number of deaths assignable to this cause being 561, of a total of 2924 casualties. Of this number trainmen sustained 456 deaths and 1838 injuries. Railway travel is found to be the least safe in the States south of the Potomac and Ohio rivers, Groups IV and V. Thus, in this territory, 1 employé is killed for each 241 men employed, and 1 trainman is killed for each 65 men employed. One passenger is killed for each 838,555 passengers carried. In the States lying east of Illinois and north of the Ohio and Potomac rivers, that is, Groups I, II, and III, 1 employé is killed for each 290 men employed, and 1 trainman for each 107 men employed;

1 passenger is killed for each 2,519,851 passengers carried. The statistics of the Western territory show that railway employment and travel is slightly safer than in the Southern States.

THE CARDINAL TRUTH OF CLIMATE-THERAPY.

"THE one great truth stands ever before the eye of the modern surgeon—cleanliness; absolute, scrupulous cleanliness leads to success. Change of climate for consumptives is extremely valuable, but it involves many disadvantages which are far more fatal to its success than the abuse of antiseptics is in wound-treatment, and yet we continue to send patients away from comfortable homes to uncomfortable hotels and boarding-houses, or incomplete sanitaria, where many disadvantages in diet and probable indiscretions in exercise neutralize the most valuable element of all appropriate climates—pure air. It will be a glorious day for medicine when the physician will recognize that the *constant exposure of the phthisical patient to pure air* is the cardinal truth of climate-therapy, as cleanliness is now recognized by the surgeon in wound-treatment."—DR. SIMON BARUCH in the *Dietetic and Hygienic Gazette*, January, 1892.

CORRESPONDENCE.

CHICAGO.

U. S. Medical Secretary of Public Health—Hospital for Contagious Diseases—The Charity Ball—Medical Staff of Cook County Hospital—Springfield Capital District Medical Society—Preparations for an Exhibit of the Status of Sanitation in 1893.

REGARDING the work of the committee appointed at the last meeting of the American Medical Association to memorialize Congress to create a cabinet officer to be known as the Medical Secretary of Public Health, the daily press of this city is highly in favor of the establishment of such a department at Washington. It has shown that international sanitation will be an easy outgrowth of the perfection of sanitary precautions at home. The United States has a natural right to be considered a leader in all matters pertaining to the public health. As the recipient, also, of a perennial stream of immigration from foreign countries, this nation is entitled to considerable latitude in impressing on other governments its views on sanitary matters. The creation of a department of public health would have the dual advantages of increased protection at home and the diffusion of sanitary education abroad.

The new County Board has taken its first actual step toward the erection of a hospital for contagious diseases. A resolution was introduced at a recent meeting directing the county architect to prepare plans for a structure suitable for this purpose, to be built on the grounds of the County Hospital at a cost not exceeding $50,000. The resolution was adopted. It cannot be said that the Board has acted with undue precipitancy. Considering the state of public feeling, as it has been expressed in the press and at large, enthusiastic, and even vociferous mass meetings of the people, it may even seem to not a few persons that the Board has been more deliberate than the circumstances required. These persons believe that, whatever else be done or left undone, a hospital for contagious diseases must be provided forthwith, if only to avert a distressing and calamitous scandal.

From $21,000 to $25,000 were cleared by the recent Charity Ball, as against less than $20,000 netted by that of last year. St. Luke's Hospital is to have one-third. St. Luke's, founded twenty-six years ago, is, as it ought to be, one of Chicago's pet charities. Another third will go to the Women's and Children's Hospital, also founded in 1865, and the rest of the money will be divided equally between the Visiting Nurses' Association, the charity work of the World's Fair, and the Margaret Etter Crèche, which takes care of small children while their mothers are out at work.

The Public Service Committee recently selected the medical staff of the Cook County Hospital. By a former resolution the staff was made to consist of thirty-six physicians, divided among the schools as follows: Regulars, twenty-three, homeopathic six, and eclectic five. All were selected with the exception of the members to represent the homeopathic school. In regard to this a letter was received from the Homeopathic Society, requesting that eight physicians named in the letter be elected to represent that school. As six only are allowed, the society was informed that they would be allowed to name them. Several of the old staff secured reëlection. The majority, however, are new men. The committee started out by allowing each commissioner to name a man. The fifteen regular physicians chosen in this way were: Drs. J. B. Herrick, A. Babcock, J. Boas, P. J. Rowan, J. Price, J. J. Bouffler, D. D. Owsley, C. W. Johnson, G. L. Morganthau, E. W. Lee, J. Frank, J. O. Hobbs, C. W. Earle, J. B. Murphy, and Denslow Lewis. Physicians were then placed in nomination, and eight of them selected by ballot. They were: Drs. J. H. Curtis, Christian Fenger, N. Senn, J. R. McCullough, Bayard Holmes, Arthur Blavin, C. Sandberg, and A. J. Ochsner.

The Capital District Medical Society was organized recently at Springfield. It includes the regular physicians of Springfield, Decatur, and Jacksonville, and the adjacent territory. The following officers were elected: *President*, Dr. T. A. Wakely, Jacksonville. *Vice-Presidents*, Drs. Geo. N. Kreider, Springfield; W. B. Hostetter, Decatur; and L. H. Clampett, Jacksonville. *Secretary*, Dr. B. B. Griffith, Springfield. *Treasurer*, F. J. Brown, Decatur. *Judicial Council*, Drs. C. E. Black, E. A. Prince, L. P. Walbridge, T. J. Pitner, and E. A. Walbridge. About fifty physicians were in attendance.

In pursuance of a call by Dr. Benjamin Lee, Secretary to the Pennsylvania State Board of Health, a number of prominent sanitarians, health officials, and others connected with sanitary matters, met in conference with the Hon. Selim H. Peabody, Director of the Section of Liberal Arts, and Dr. John H. Rauch, Chairman of the Committee of the American Public Health Association, on a World's Fair sanitary exhibit. The delegates met at 10 A.M., January 14th, in the directors' room. There were present: Dr. Benjamin Lee, Secretary to the Pennsylvania State Board of Health; Dr. Henry B. Baker, Secretary to the Michigan State Board of Health; Dr. Charles N. Hewitt, Secretary to the Minnesota State

Board of Health; Dr. C. D. Smith, member of the Maine State Board of Health; Dr. C. N. Metcalf, Secretary to the Indiana State Board of Health; Dr. F. W. Reilly, Secretary to the Illinois State Board of Health; Dr. J. T. Reeve, Secretary to the Wisconsin State Board of Health; Dr. S. P. Wise, member of the Ohio State Board of Health; Dr. H. H. Clark, member of the Iowa State Board of Health; Dr. M. O'Brien, Secretary to the Kansas State Board of Health; Dr. Charles McLellan, member of the Provincial Board of Ontario; Dr. John D. Ware, Health Commissioner of Chicago: Dr. J. H. D. McShane, Health Commissioner of Baltimore; Dr. U. O. B. Wingate, Health Commissioner of Milwaukee; Dr. D. S. Shellaberger, Health Commissioner of Sioux City; and Dr. John H. Rauch, of the American Public Health Association.

Dr. Rauch, in calling the conference to order, stated the purposes of the conference, and, after a general discussion by the delegates and a statement of the plans and resources of the "liberal arts" department by Prof. Peabody, it was resolved that the members of the conference coöperate with the committee of the American Public Health Association and with the general plan and scope of the World's Fair auxiliary congresses under the Hon. C. C. Bonney.

The Chairman, Dr. Rauch, was authorized to appoint a committee of seven to formulate plans for the State sanitary exhibits, and at the evening session of the conference the members of this committee were instructed to submit their suggestions and views to the Chairman, Dr. Benjamin Lee. The remaining members of the committee appointed by Dr. Rauch, are: Dr. Henry B. Baker, of Michigan; Dr. C. N. Hewitt, of Minnesota; Dr. J. T. Reeve, of Wisconsin; Dr. J. D. Kennedy, of Iowa; Dr. C. N. Metcalf, of Iowa; and Dr. F. W. Reilly, of Illinois.

THE CAUSE OF THE INUTILITY OF ERGOT IN THE INTESTINAL HEMORRHAGE OF ENTERIC FEVER.

To the Editor of THE MEDICAL NEWS,

SIR: As an addendum to the communication in THE MEDICAL NEWS of January 9th, relating to the therapeusis of intestinal hemorrhage in enteric fever, I would like to state that the inutility of ergot in this condition has a source deeper and a significance wider than was noted by your correspondent. A hemorrhage of sufficient gravity in enteric fever to demand a resort to specific measures to cause its cessation usually emanates from an eroded vessel. Ergot here, as in the hematemesis of gastric ulcer—also commonly dependent upon the erosion of an artery—is not only useless, but absolutely harmful, since, from its constricting effects on the vessels being limited to the arterioles, and causing resistance *à fronte*, when a vessel larger than an arteriole is the source of hemorrhage, the increased pressure results in augmentation of the bleeding. This fact, though of vast importance, is apparently known to few. It was pointed out some time ago by Dr. A. H. Smith, in a communication to THE MEDICAL NEWS relating to the hematemesis of gastric ulcer. The principle underlying it should govern the administration of ergot for the control of hemorrhage—to use in that produced by capillary oozing, to avoid in that resulting from rupture of a vessel larger than an arteriole.

Still another important objection to the employment of ergot in the intestinal hemorrhage of enteric fever is the fact that active peristaltic movements are thereby produced, the effects of which would inevitably be to disturb the ulcerated bowel, to provoke more rapid separation of the sloughs, and to aggravate the tendency to bleeding.

These dangers are not imaginary, and are more imminent than that of gangrene observed by Dr. Rodman in his cases.

Very respectfully yours,

D. D. STEWART, M.D.

PHILADELPHIA.

REVIEWS.

PTOMAÏNES, LEUCOMAÏNES, AND BACTERIAL PROTEIDS. By VICTOR C. VAUGHAN, M.D., and FREDERICK G. NOVY, M.D. Second Edition. Philadelphia: Lea Bros. & Co., 1891.

THE second edition of this work will doubtless have the same favorable reception as was accorded the first three years ago. No more clear, concise, and readable exposition of the obscure subjects with which the work has to deal has been written. The work is properly a standard.

This second edition gives evidences of the remarkable progress in the branch of science of which it treats on its very title-page, in the addition of the term "bacterial proteids," designating a group of substances not previously included in the work, and indeed until recently unknown. Throughout the book are further proofs of the advances in knowledge, as in the articles on tuberculosis, diphtheria, swine-plague, rabbit septicemia, pneumonia, and malignant edema, which are entirely new, and in that on tetanus, which has been greatly extended. The chapters on "The Nature of Immunity-giving Substances," "Bacterial Products which Favor the Development of Infectious Diseases," and on "The Germicidal Proteids of the Blood," are new, and contain matter of the greatest interest and importance.

We agree with the authors as to the propriety of rejecting the term "toxalbumins," and adopting the more correct one, "bacterial proteids." However, even with this change, the nomenclature cannot be regarded as satisfactory; we should have been glad to have had the opinion of the authors as to the nomenclature proposed in THE MEDICAL NEWS of July 18, 1891.

ESSENTIALS OF NERVOUS DISEASES AND INSANITY: THEIR SYMPTOMS AND TREATMENT. A MANUAL FOR STUDENTS AND PRACTITIONERS. By JOHN C. SHAW, M.D., Clinical Professor of Diseases of the Mind and Nervous System, Long Island College Hospital Medical School, etc. Forty-eight original illustrations, mostly selected from the Author's private practice. Philadelphia: W. B. Saunders, 1891.

THIS little volume, which is No. 21 of "Saunders's Question Compends," contains 190 pages. In his preface the author states that the book is intended to be used "somewhat as a primer for advanced students."

There is much truth in the saying that it is more diffi-

cult to write a small treatise than a large volume. The author of a small book must know what to omit as non-essential; he should say what he has to say in clear and concise language; he must emphasize essential points; he should eschew discussion of controversial matters and rare diseases. We do not think Dr. Shaw has succeeded very well in surmounting these difficulties. His classification of disease seems to us unfortunate and misleading. For instance, peripheral neuritis, alcoholic neuritis, and multiple neuritis, are classed under the head of "Injuries of Nerves." Imperative conceptions, which are symptoms (just as delusions or hallucinations are), are treated as a separate disease under the head of "Degenerative Insanities." Syringomyelia and acromegaly, of interest to the specialist chiefly as rare and curious diseases, are not of enough importance to the student to justify five pages of description. On the other hand, the insufficient space of four pages is devoted to epilepsy and chorea. In dealing with the treatment of melancholia the author omits to call attention to precautionary measures against suicide. The description of paranoia is quite a good one—perhaps the best in the compend. But, taken as a whole, we cannot commend the book.

NEWS ITEMS.

The International Executive Committee of the Pan-American Medical Congress.—The Committee on Organization of the Pan-American Medical Congress, at its meeting at St. Louis last October, elected the following International Executive Committee: The Argentine Republic, Dr. Pedro Lagleyze, of Buenos Ayres; Bolivia, Dr. Emelio Di Tomassi, of La Paz; Brazil, Dr. Carlos Costa, of Rio de Janeiro; British North America, Dr. James F. W. Ross, of Toronto; British West Indies, Dr. James A. DeWolf, of Port of Spain; Chile, Dr. Moises Amaral, of Santiago; United States of Colombia, Dr. P. M. Ibanez, of Bogotá; Costa Rica, Dr. Daniel Nuñez, of San José; Ecuador, Dr. Ricardo Cucalon, of Guayaquil; Guatemala, Dr. Jose Monteris, of Guatemala Nueva; Hayti, Dr. D. Lamothe, of Port au Prince; Spanish Honduras, Dr. George Bernhardt, of Tegucigalpa; Mexico, Dr. Tomés Noriega, City of Mexico; Nicaragua, Dr. J. I. Urtecho, of Grenada; Peru, Dr. J. Caramina Ulloa, of Lima; Salvador, Dr. David J. Guzman, of San Salvador; Spanish West Indies, Dr. Juan Santos Fernandez, of Habana; United States, Dr. A. Vander Veer, of Albany, N. Y.; Uruguay, Dr. Jacinto DeLeon, of Montevideo; Venezuela, Dr. Elias Rodriguez, of Caraccas; Hawaii, Paraguay, Santo Domingo, the Danish, Dutch, and French West Indies are not yet organized. Nominations of local officers have been received from a majority of all of the members of the International Executive Committee, and a number of the lists have been confirmed by the Committee on Organization.

Laboratory of Hygiene, University of Pennsylvania.—It is announced that the laboratory of hygiene of the University of Pennsylvania will be opened for practical work on February 1, 1892. The building contains chemic and bacteriologic laboratories, special rooms for investigations upon air, water, food, soil, clothing, etc., workshops and photo-micrographic rooms, and special arrangements for demonstrating the principles and practice of heating and ventilation, house-drainage, etc. The work of the laboratory will be under the charge of the director, Dr. John S. Billings. Dr. A. C. Abbott has been appointed first assistant, and Dr. Albert A. Ghriskey, assistant in bacteriology. A course in practical hygiene and an elementary course in bacteriology, each of eight weeks, have been established.

University of Michigan.—The first ward of the new hospital of the medical department of the University of Michigan was formally opened January 20th by the Governor of the State. An address on "The Hospital: an Element and Exponent of Medical Education," was delivered by Dr. Albert L. Gihon, Medical Director, United States Navy.

The hospital is provided with modern appliances. The ward just completed contains a clinical amphitheater, consultation-rooms, offices, and accommodations for eighty patients. It has cost about eighty thousand dollars. The plan provides for three additional wards, the erection of one of which will be begun during the current year.

Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, amounting to about one hundred and eighty dollars, the income for one year of the bequest of the late Senor Alvarenga, will be made on July 14, 1892. Essays intended for competition may be upon any subject in medicine, and must be received by the secretary of the College on or before May 1, 1892. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college.

The Medical Faculty of the University of Tübingen has offered two prizes for the best essays on each of the following subjects: "A Critical Résumé of Recent Theories of Glaucoma, Preferably Based upon Original Experiments upon the Eyes of Animals;" "The Influences, if any, Exerted by Antipyrin, Antifebrin, and Phenacetin upon the Conditions that Follow the Excessive Use of Alcohol."

The Therapeutic Gazette has undergone an editorial change. Dr. Robert Meade Smith has retired. Dr. Hobart Amory Hare has become editor-in-chief; Dr. George E. de Schweinitz, editor of ophthalmic and aural therapeutics; and Dr. Edward Martin, editor of surgical and genito-urinary therapeutics.

BOOKS AND PAMPHLETS RECEIVED.

Intubation of the Larynx. By Carl H. von Klein, A.M., M.D. Reprint, 1891.

Saunders's Pocket Medical Formulary, with an Appendix Containing Posological Table, Formulary and Doses for Hypodermatic Medication, etc. By William M. Powell, M.D. Philadelphia: W. B. Saunders, 1891.

The Supreme Passions of Man. No. 1. By Paul Paquin. Battle Creek, Mich.: The Little Blue Book Company, 1891.

Is a Child Viable at Six and a Half Months? By Llewellyn Eliot, M.D., of Washington, D. C. Reprint, 1891.

A Case of Congenital Cystic Elephantiasis. By W. Reynolds Wilson, M.D. Reprint, 1891.